THE CINEMA

Works by M. Jackson-Wrigley
> *The Film: Its Place in Popular Education*
> *A Medley of Songs*
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> *The Public Library and the Adolescent*
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WILLIAM FRIESE-GREENE

(1855-1921)

THE CINEMA

HISTORICAL, TECHNICAL
AND BIBLIOGRAPHICAL.
A SURVEY FOR LIBRARIANS
AND STUDENTS

By

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With an Introduction by
WILLIAM ARMSTRONG, M.A.
*Director-Producer of the Playhouse,
the Liverpool Repertory Theatre*

Dedication

In Memory of the 13th

" We are but shadow-pictures,
        voices, dreams;
    Perchance they make and break us—
        just for fun."

<div align="right">RICHARD LE GALLIENNE.</div>

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PREFACE

To many the cinema is a method of expression suited to the needs of the present day. It is an efficient medium of propaganda, either through its fictional value or its power of advertisement. Thanks to its many technical appliances the screen provides a cultural and æsthetic entertainment for its audiences.

With the advent of the sound film the cinema entered upon the second phase of its amazing career. Day by day its influence exercises a greater hold on the imagination of the people.

Speaking in terms of finance, approximately five hundred million pounds of capital are invested in the industry, which attracts two hundred and fifty million people or more every week. Four-fifths of this capital is invested in the United States of America.

Commencing in its infancy as an industry, the cinema emerged from crudeness and blossomed into an art. Today the people are film-conscious owing to extensive publicity and the accessibility of the film as a means of entertainment. At the present time Soviet Russia is the country which sees and understands most clearly the highest significance of the industry, but drama and literature have proved that the public can be taught to appreciate a standard above its head. Therefore a cultural improvement should be aimed at, because the cinemato-

graph in all its forms has an extremely powerful influence for good or otherwise on the peoples of the world.

I have to acknowledge the kind permission of the British Film Institute and the British Kinematograph Society for the use of material.

<div align="right">M. JACKSON-WRIGLEY.</div>

Liverpool, May, 1939.

INTRODUCTION

The film could be rightly described as the most representative of all forms of dramatic expression. Many books have already been published on the subject, but Mr. Wrigley and his collaborator, Mr. Leyland, have succeeded in writing something different. They have given us a study of the film from many varied angles. After many years of investigation, Mr. Wrigley has collected a mass of information which is of value to everyone interested in the universal art and progress of the film, and his work might be safely labelled as " a mirror to the films." Owing to its criticism and the many suggestions for the betterment of films in general, this book will be certain to create much interest and much controversy. It will appeal to those who are engaged in the educational, religious, theatrical, and political professions.

Both authors have a strong belief in the film as a means of cultural advancement. They are courageous advocates of the vital and important part which the film should play in the world of education. Librarians will be attracted by the many hints as to how a library could be popularised through the medium of the film.

The work should find a wide circle of readers, not only in this country but abroad, and I am honoured that I should have been asked to write this introduction, brief yet sincere, to a book so deserving of success.

WILLIAM ARMSTRONG.

The Playhouse,
Repertory Theatre,
Liverpool.
1939.

PART I

HISTORICAL

INVENTION

The art of the cinema is a new art, one that has evolved and come to the perfection of today within living memory. Mechanical ingenuity has been inseparably linked with its evolution and must always be so, for without precision instruments it is impossible either to record scenes upon film strips or to project pictures upon a screen. Cinematography is both an art and a science, and may be studied from both standpoints, the one being linked with the other. It is important to realise this and also that the commercial exploitation of the film has been a potent factor in its development.

From the commencement of this strange new art its entertainment value has been fully understood and thoroughly exploited, but its potency as a cultural medium has been neither realised nor exploited as it might have been. In any study of the subject, therefore, it is necessary to understand very thoroughly the commercial aspect of the film, the rise of the huge entertainment industry and the inevitable desire of all industrial undertakings to make money. The fact that at least ninety per cent of films intended for public consumption are produced by private firms in order to make money has led to failure to use the film as anything but a box-office draw. It is only very recently that it has been used at all extensively as a cultural or educational medium.

As with many other mechanical inventions there have been many claimants for the honour of being father of

the film. Many men in many countries, however, with no knowledge that others were pioneering along the same paths, were working at the problem of the recording and projection of moving images and the consequence has been that many claims to the invention are as valid as one another. If any one man is to be singled out, however, it should be William Friese-Greene, whose claim to the original invention was established in the courts of America.

Friese-Greene was an Englishman, and his invention was conceived in a sleepy Sussex home, set in the quiet country midway between the South Downs and the sea, a place too peaceful, one would think, to be the cradle of a mechanical invention. He was at school at Christ's Hospital when he undertook the first experiments, and as seems to be the common lot of genius he was restricted by poverty and ill-health all his life. He had studios at both Bath and Clifton, and the invention was born at the former, at 34, Gay Street, in June, 1885, when his friends were brought in to view what they imagined was to be a magic-lantern display. They did not see the prosaic Biblical or scenic views, however, but a moving image of a girl upon the screen.

The image must have flickered very considerably, but one can imagine the astonishment of the audience, and marvel at the incredible rapidity with which the film, after that June day, evolved. It is a long cry from that darkened room to the brilliant screens of the huge cinemas of today, and to Friese-Greene and his contemporary workers must be given the honour of founding a great industry that has increased the wealth of thousands and the happiness of countless millions.

It was in the same year, 1885, that Friese-Greene submitted his invention to the Royal Photographic Society of Great Britain, but it is not surprising, knowing the reactions of learned bodies to impecunious inventors, that little interest was shown. He continued with his

experiments, however, in the face of opposition, ill-health and poverty. He was eventually imprisoned for debt and all his photographic equipment was sold by auction. Undaunted, however, he refused to give up, and the solution of one problem came to him in a flash of inspiration.

Hitherto he had used long strips of paper soaked in castor oil to make them transparent, and these he had passed through the mechanism of his crude projector. Suddenly he conceived the idea of using strips of celluloid, with the images photographed thereon, for the paper had been too fragile, and celluloid, he thought, would be tough and flexible, an essential quality. He found that he had to clarify the celluloid, however, and used steam to achieve this purpose.

Then came another inspiration, the punching of small holes down each side of the celluloid strip, so that it might be steadied by means of sprockets when passing through his projector. This he protected by having it patented, and it is the method universally used today.

In 1890 he moved to London, to 20, Brook Street, where he was successful in printing the first moving picture photographed on a celluloid film. One of his first films was of a dancing skeleton, and he was the cause of a minor disturbance in the road outside, for he projected the moving picture on to a square of transparent paper pasted over the window, so that the show was seen by huge crowds in the street outside. The vision of a dancing skeleton poised above Piccadilly must have caused Londoners to wonder if they were dreaming.

Friese-Greene made two colour films, " A Gentleman in Uniform " and " Flowers," to which was attached a note—" Have now invented photos in natural colours, a far-reaching and important invention." A second note stated—" The fault, if any, is that my inventions are before their time." The *Lantern Journal*, which later

changed its title to the *Kinematograph Weekly*, provided the following description of the invention:

" Mr. Friese-Greene has invented a peculiar kind of camera, to outward appearances not unlike an American organette, handle and all, about one foot square. This instrument is pointed at a particular moving object, and by turning a handle several photographs are taken each second. These are converted into transparencies and placed in succession upon a strip which is wound on rollers and passed through a lantern of peculiar construction, and by its agency projected upon a screen. When reproduction of sound is also required this machine is used in conjunction with the phonograph."

This last sentence is of peculiar interest, for it proves that Friese-Greene was from the beginning interested in the accompaniment of films by sound, as also was Edison, and it is peculiar that though the evolution of the silent film was so rapid the rise of sound synchronisation should have been so tardy.

Friese-Greene spent a great deal of money upon his experiments, reputed to be as much as £16,000, and he received little reward for his labours. It was at a meeting held on May 5th, 1921, at the Connaught Rooms, London, convened to consider the question whether Britain should manufacture her own films or allow American producers to dominate the film industry, that he was found dead in his seat. In the Gaumont Palace at Chelsea there is a plaque to his memory.

HISTORICAL SUMMARY OF FRIESE-GREENE'S ACTIVITIES

1855 Born September 17th, 1855.

1882 He joined forces with John Rudge, who had devised a projection lantern called the " Bio-Phantoscope," the revolving lantern of life.

1885 In June of this year Friese-Greene made his discovery relative to the film and submitted his theories to the Photographic Society of Great Britain.

1887 He conceived the idea of linking up the newly invented phonograph of Edison Bell with photographic movement, and sent a description of his camera to Edison, whom he asked to co-operate with him in producing talking pictures. Drawings of the camera patent were sent but nothing more was heard of the matter.

1889 Friese-Greene was committed to Brixton prison for debt and all his cameras and apparatus were sold by public auction to defray his debts. Mr. Mortimer Evans who was working with him sold his share of the patent rights to Friese-Greene for £200.

1890 He moved to 20, Brook Street, London, where he developed and successfully printed the first moving picture photographed on a celluloid film.

1892 He perfected a movie camera.

1915 He was destitute in this year. Mr. Will Day visited him, a relief fund was opened and the members of the film industry subscribed a sufficient amount to tide him over his difficulties. Fortunately for him during this year he was offered a post under the Government in connection with aniline dyes Later he was offered a post with a colour-photographic company, holding this position until his death.

1921 He died suddenly of heart failure on May 5th, 1921, whilst attending a meeting at the Connaught Rooms, London.

Amongst the other inventors who, each in his own little world, was working towards the same goal, the recording and subsequent projection of moving images photographically, was Eadweard Muybridge. He commenced his investigations in 1872, by studying the science of Zoopraxography, which is roughly the science of animal locomotion. Projected upon a screen is a series of the most important phases of some act of locomotion, the phases being then combined in the Zoopraxiscope, a type of motion-picture projector, which reproduces the movements of life.

The object is to reproduce minute detail, and such movements as the wing action of birds and the leg action of quadrupeds can clearly be seen. To the scientist this study is of the utmost importance, and Eadweard Muybridge, official photographer for the United States Government for the Pacific Coast, was engaged upon its investigation. The rapid dry plate had not yet been

evolved, and it was necessary to develop an intense and contrasted image upon a wet collodion plate after a very brief exposure. That exposure could be no more than the time it takes for a horse's hoof moving at a hundred feet per second to pass the lens of a camera. It was also necessary, of course, that the image should be sharp.

An argument arose as to whether a trotting horse has at some time during its stride all four feet off the ground, and Muybridge's experiments decided the controversy in favour of those who believed that this was so. It should have been obvious, one would have thought, for many horses achieve a stride of over twenty feet in length, so that all four feet must inevitably be clear of the ground at some time during the stride. The argument and its settlement had its value for the evolution of the film, however.

The experiments were first undertaken at Sacramento, California, appropriately enough, and a well-known trotter, " Occident," was used, passing rapidly in front of the camera. A few impressions were printed from the negative that showed the horse with all four feet off the ground and aroused some comment in the local press. At first the photographs were made with a single camera, but the process was too tedious, and it was difficult to arrange them in consecutive order that the full stride might be shown. Later a number of cameras were used, and by the time the experiments were completed a most complicated machinery plant had been set up. Results were achieved, and by means of the Zoopraxiscope, it was possible to examine minutely the various phases of animal locomotion.

George Augustus Sala stated in the *Illustrated London News*, after seeing an exhibition of the Zoopraxiscope :

" Mr. Muybridge exhibited a large number of photographs of horses galloping, leaping, etc. By the aid of an astonishing apparatus called a Zoopraxiscope, which may be briefly described as a magic lantern run mad (with method in the madness), the animals walked, cantered,

ambled, galloped and leaped over hurdles in a perfectly natural and lifelike manner."

Muybridge's instructions for converting a circle of figures into a Zoopraxiscope were as follows :

" Cut out the disc, and, radiating from the centre thereof, about midway from the margin, cut out or stamp thirteen equidistant perforations, each an inch long and about the sixteenth of an inch wide. Pin the centre of the disc to a handle and revolve it in the direction of the arrow, at a distance of about twenty-four inches in front of a mirror. By looking through the upper series of perforations at the reflection of the lower series of figures a semblance of the original movements of life will be seen. The figures may appropriately be coloured and the back of the cardboard disc should be painted a dark colour, or covered with a piece of dark surfaced paper before cutting the perforations."

This process is not, of course, intended for projection upon a screen.

E. J. Marey was also concentrating upon the recording of movement, though on somewhat divergent lines. In 1872 he published a work entitled *Animal Mechanism: a Treatise on Terrestrial and Aërial Locomotion*, which in 1895 was followed by an enlarged work entitled *Movement*. There is no doubt that the work of these scientists contributed largely to the evolution of the cinema, in that it led the thoughts of inventors towards the possibilities of moving pictures.

No survey of the evolution of the cinema could be complete without mention of the famous inventor, Edison, though it is not correct to suppose that to him and him alone are we indebted for the film of today. It is interesting to notice that it was only in order to supplement his phonograph that he ever entered the field of cinematography at all. He worked along very similar lines to Friese-Greene, though it was not until 1887, two years after Friese-Greene had submitted his results to the Photographic Society, that he commenced opera-

tions. This should effectually dispose of the claim that has so often been put forward that Edison invented the cinematograph projector.

As was to be expected, Edison's first efforts were not crowned with great success, but in 1889, due largely to the production of the Eastman-Kodak film, he produced the " Kinetoscope," and may justly claim to have been the father of the film industry if not of the first projector. The machine was crude, but was not essentially a projector at all, in that it was only possible for one person to view the show at a time, and this only by peeping through a slit made for the purpose. The illusion of movement in the " Kinetoscope " depended upon the same principle used in the modern projector, the interruption of the light passing through the lens, and he achieved this by the use of a slotted disk.

Evolution after this was rapid, and Friese-Greene's inspiration for pulling the film down by means of perforations was generally adopted, a cogged wheel slipping into the perforations and pulling the film down one picture at a time. This principle is still universally used. It was Robert W. Paul, a scientific instrument maker, who invented a device which is to be found on nearly all modern projectors, the maltese cross, which imparts the interrupted movement essential to moving pictures. This device was in the shape of a maltese cross, slotted along each cross-section, the segments between the crosses being made as smooth as possible. A small pinion, revolving at a constant speed, slipped into the slots and thus revolved the maltese cross, but failed to revolve the cross when the pinion was not engaged in the slots. This enabled the film to remain stationary behind the lens for a fraction of each second, moving down one picture at a time when the necessary interval had elapsed. It is not too much to state that this simple device spelt success for the moving pictures.

The limitations imposed by the construction of Edison's " Kinetoscope " were severe, and there was

soon a demand for a machine that would project pictures upon a screen, thus enabling several persons to view the show at the same time. It is most peculiar that Edison himself should have been short-sighted enough to believe that such a machine would soon cease to be popular, and he resolutely refused to alter the " Kinetoscope." Nevertheless, thousands of his machines were installed all over America, and he certainly contributed very largely both to the successful invention of moving-picture projectors and also to the educating of public demand. It will be remembered that Friese-Greene had already invented a machine capable of projecting pictures upon a screen, and it is to be deplored that his ideas were not recognised for what they were in this country.

Paul improved his invention considerably, naming the machine he produced the " Theatregraph," and exhibited moving pictures in London in 1896 at the London Technical College. Among his first films were " Rough Sea at Dover," " Shoeblack Working in a London Street," and " An Engineer Working in a Shop." A little later he showed colour films, though these were hand-painted. Other pioneers included C. Francis Jenkins, who took some photographs of a dancer on the stage, the Lumière brothers and Thomas Armat, and J. Stuart Blackburn, who improved Edison's machine. Progress after 1896 was rapid, and many projectors were placed upon the market, with the inevitable result that costly lawsuits concerning infringement of patent rights were common, and temporarily hindered further progress.

With the machines themselves more or less adequate, it was not long before the first cinemas were springing up, the first being built by Montague Pyke, and was called " Pyke's Circuit." Then came the " Nickeldeons," cinemas where the entrance price was five cents, the first being built in Pittsburg, and being followed by hundreds all over the United States, whose citizens have ever been quick to see opportunites for making money. Many of the

important men in the film industry of today commenced operations by erecting such cinemas. In England and the rest of Europe films were exhibited in theatres and concert halls, and many will remember the flickering oblong of light that used to flash on to the temporary screen at the end of variety shows in the old days. Commencing in 1903, Hale's Tours, as they were called, were seen by thousands of people. These " tours " consisted of travel films, and the cinemas in which they were shown were equipped to resemble railway carriages, and to make the imaginary journey more realistic the carriage even rocked from side to side!

It was not long, naturally enough, before studios for film production were erected, and the industry put upon a sound basis.

CHAPTER II

RISE OF THE FILM INDUSTRY

Turning from the evolution of the projector to the work which must always precede actual projection upon the screen, production, we find that the specialised technique demanded by the strange new medium was inevitably tardy in evolution. It was a matter of trial and error, and the first films were almost exclusively non-fictional. In 1897 the Corbett-Fitzsimmons fight at Carson City, Nevada, was shown in the United States by Enoch Rector, and the film depicting this event was eleven thousand feet in length! During the same year a version of the Oberammergau Passion Play was made by Richard Hollaman and was three thousand feet in length. This was not a genuine reproduction, however, but was made in America. It is, therefore, an early example of a story-film.

Progress in the art of camera-work was rapidly being achieved, and well before 1900 trick devices, usually discovered by accident, were being used. These included fade-outs, dissolves and other methods once common enough on the screens of the world as tricks, but now used not for themselves alone, but only as the film demands. There is a great difference, for at one time, when producers first stumbled across them, they were used *ad nauseam*. Many will remember the crazy buildings that built themselves before our eyes, and the inebriated traffic that suddenly decided to move backwards! The conjurer, Georges Melies, at the Théâtre Robert Houdin in Paris used the film as a medium and achieved some

amazing results in trick photography. One of his films was the fantastic " Trip to the Moon."

It was not until 1903, however, that the first important attempt to relate a story by means of the film was accomplished. This was produced by Edwin S. Porter, and was entitled " The Great Train Robbery," being eight hundred feet in length. It is interesting to note that in the early days of the industry there was a very definite dislike on the part of exhibitors to lengthy films, and even when the multi-reel film was being produced, it was at first the practice to issue only one reel at a time. Following the Porter film came many others, all one-reel, the majority being crude melodrama.

In 1907, D. W. Griffiths was at work on films in America, and it is due to him more than to any other one man that a specialised technique was evolved. He realised the significance of the close-up, the fade-out, the dissolve and other methods of emphasis now such integral parts of camera technique that they are unnoticed by the average cinema-goer. Hitherto the production of films had merely been a matter of recording scenes, and the possibilities of cinema technique were unrealised.

In 1907, " Ben Hur " was produced, in sixteen scenes, which is an excellent example of the theatre technique then in use. A modern film has hundreds of scenes. Gradually films grew in length, though they were released only one reel at a time, until in 1910 another great step forward was achieved by the release of multi-reel films in their entirety.

From 1911–14 the industry developed by leaps and bounds, and it is an interesting fact, and in many ways a sad one, that during these early years of the cinema industry, England was producing the best films. It was the Great War that, among its other disastrous results, prevented England and other European countries from continuing their dominance of the market and enabled America to grasp the opportunity thus offered. By one method or another American producers have retained

the lead they procured during 1914–18, and it is interesting to speculate what would have been the consequences to the film industry if there had been no war at this crucial point in the evolution of the film.

During the three years immediately before the war there were three important film-producing companies operating in England, the Hepworth, British and Colonial Kinematograph, and the London Film Companies, and the standard of the films produced was exceptionally high. From France during this period came historical films, an example of which was " Queen Elizabeth," produced by Louis Mercanton, and from Italy came films with a classical background, such as " The Fall of Troy," " The Sack of Rome," and Homer's " Odyssey."

The industry was by this time beginning to find its feet, and the first public trade show took place in 1912 in London. Here for the first time were gathered together exhibitors from all over the country, the film shown being " Christopher Columbus."

With the outbreak of the world war production ceased in every European country, and the history of the film industry from that date onwards, or at any rate until 1930, is predominantly the history of the American film industry. During the last few years the English industry has revived and the signs of continued improvement are encouraging. The grip upon the world markets achieved by America, however, will not be easy to loose, and the influence the American producers have exerted upon the evolution and exploitation of the film would be hard to overestimate.

The war left the European countries more interested in reconstruction than in exploiting the film, and cinema owners found it easier and cheaper to rent their films from Hollywood than to enter into production themselves. Neither, of course, was the money available, for America had realised long ago that a vast amount of money spent on one film brought its inevitable reward,

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whereas English producers had failed to realise this fundamental fact, and would probably have refused to cast their bread upon the waters even if the bread had been available.

To America we owe the star system, whereby the public has been educated to demand an actor rather than a story. The film actor of today is more important than the story which he is acting or the character he is depicting. Sex, sex, and yet more sex has been the cry, deliberately fostered by the astute Hollywood producer, who understands perfectly this fundamental urge in the human race. Little though it knows it, the huge cinema-going public has been educated to demand a certain type of film, and America has used every trick to keep the allegiance of the public not only in America, but in nearly every other country in the world.

Stories are no longer important, it is the personality of the star that counts. News concerning these actors is religiously fed to the press of the world, and so fantastic has the adulation become that when Robert Taylor came to London recently he was nearly mobbed by thousands of hysterical women. When Rudolf Valentino died women all over the world committed suicide! It is not to be wondered at, therefore, that with the success of the star system so well proved, American producers should have continued the system by every means within their power. Now their huge organisations are busy from one year's end to the next in discovering new stars whose personalities will appeal to the public, and in making certain that old favourites retain their positions. As the Americans say, it is a racket, though a profitable one. Its result upon the film as a medium of culture, however, has been deplorable.

To America we also owe the pernicious system whereby exhibitors, if they wanted a super-spectacle film, had also to accept a number of third-rate pictures. Later this became even worse, and exhibitors had to contract to rent films they had never seen and that as often as not

were as yet unmade. These third-rate films, products of American studios, were sometimes third-rate because in them actors and producers were given their first chances, and though from every point of view this process is inevitable, there is no reason why the products of inexperience should be foisted upon the public.

Americans did not stop at dominating merely the film-producing industry, but purchased chains of cinemas throughout England and other European countries. They were therefore in an impregnable position, producing films and being certain that these films would be shown, almost exclusively, to the cinema-going public of the world. The slump of 1929, however, later had its effect upon the industry, and while America rocked beneath the repercussions of the financial debacle, Europe was given a chance to regain some of its lost prestige in the film industry.

The struggle to break down American dominance has been hard and bitter. Germany soon after the war proved that her native genius was well suited to the new medium, and some of her productions, notably those of UFA, were good enough to make the American producers nervous. There were two alternatives open to the latter, and they chose the easier, and proceeded to tempt away from Germany her native stars and directors. Thus Emil Jannings, Conrad Veidt and many others were lured to Hollywood by princely salaries and the danger for the moment was past.

Russia, perhaps more than any other country, has long realised the value of film propaganda, and since the Revolution has not worried about world markets, being only interested in producing films for her own people. Among the most outstanding may be mentioned " Battleship Potemkin," and " Mother."

The fate that awaited German actors and directors also found the brains of England and France, who became cogs in the great revolving wheels of Hollywood, and there was a time when it was hardly worth watching an

English film, so poor was it certain to be. An attempt was made to control the American film industry in 1915 by the formation of the Motion Picture Board of Trade, and two years later by the National Association of the Motion Picture Industry. A third organisation, the Motion Picture Producers and Distributors of America, attempted to prevent abuses, such as salacious productions, and these movements were admirable efforts.

It was in 1925 that the tide first showed signs of turning against the Hollywood magnates, for in that year England fixed quotas in an effort to check American influence, which was beginning to make itself felt in Asia, Africa and Australia. The restriction of quotas encouraged the industry in England and progress began from that date. In 1927 the British Film Bill was made law, and compelled every exhibitor and distributing firm to include a certain percentage of British films in their programmes irrespective of merit. France and Germany introduced similar restrictions, and it was at last realised that the industry was worthy of support and that the influence the film could wield was inestimable. English companies now imitated American methods, learning from them the technique that had so laboriously been built up. The result was that such firms as British International, Gaumont-British, British Instructional and Gainsborough gained a secure footing, and the standard of the films England is now producing is considerably higher and warrants comparison with American productions.

British studios can now take their place alongside the finest Hollywood can show, and the London Film Production, at Denham, produces a million feet of film a week, directed by that genius Alexander Korda, the man who more than any other has put the English industry on its feet. He, and others, had faith and genius, and the consequence has been the erection of such studios as the Pinewood worked by the British Dominion Films Corporation, the British Lion studios at Beaconsfield, the

Gaumont-British at Shepherd's Bush, Gainsborough studios at Islington and many others.

Beachcomber's definition of an English film is amusing : " Written by an American, made by an American company, produced by a Russian, directed by a Frenchman, music by an American, photography by a German, the money for the production found by a Hungarian and all the actors and actresses American."

It is a relief to realise that all these facts are not now strictly accurate. Since 1932 three hundred and eighty new production companies have been registered in Europe.

The introduction of the dialogue film in 1929 was a milestone in the film world, and was eagerly seized upon by Hollywood, who commenced to alter technique and change studios to sound-stages overnight. It is interesting to note that the first British dialogue film, " Blackmail," was far superior to anything then produced by America, but it had a very frigid reception in that country, no doubt owing to the desire on the part of producers in Hollywood to avoid competition. The immediate success of the " talkies " was phenomenal, especially when one remembers the distorted sound effects and general unsatisfactoriness of the majority of the productions. As had happened earlier in the history of the cinema, the introduction of new methods brought in its train lawsuits, injunctions and endless litigation, but the evolution of sound films since their introduction has been amazingly rapid. It is a source of wonder, however, that sound was not coupled with moving pictures at a much earlier date. Edison produced his " Kinetoscope " as a supplement to his phonograph, and many early inventors wished to couple sound with motion. The " talkies " served Hollywood well, however, for they enabled America to stave off European competition for a while longer, for Hollywood once more led the way as regards technique, and it took European countries some time to catch up.

In surveying the history of the film industry it must

not be forgotten, however much we may deplore the dominance of America and the failure to use the film as a cultural medium, that Hollywood has contributed very largely to the evolution of technical methods. We may belittle the Americans' efforts, but the fact remains that it was they who spent time and money and endless labour in building up technique and the basis of the industry and who led where we have merely followed. Though it is to be regretted that the film has sunk to the level where it is considered only as a medium for entertainment, and cheap entertainment at that, credit must be given to America for her great part in evolving the perfected technique of today.

There are various phases in the evolution of the American film that are worth considering. Charlie Chaplin, whose influence upon the film has been incalculable, and whose ability as a screen actor will probably never be equalled, certainly not surpassed, produced in 1923 " A Woman of Paris," a brilliant satire, which gave rise to a school of light satirical comedy, superficial but brilliant, shallow but of a technical perfection seldom reached since. Ernst Lubitsch's " Marriage Circle " continued the phase, and was followed by innumerable others all cut to the same pattern. None approached the Chaplin comedy, which incidentally is not to be confused with his farces, and as has always been the case in Hollywood, this type of film was grossly overdone. Once Hollywood has produced a film that has proved popular, the result is inevitable, hundreds of copies are produced and fed to the docile public, until one becomes satiated with the type.

Following this phase came a preference for natural films, built around natural surroundings, and perhaps the best example of this type was " Nanook of the North." Among the exponents of the natural film were John Ford, Victor Fleming, W. S. Van Dyck and many others. These films are not to be confused with the Western films in which America has always specialised, or at least

until recently, and which have proved very popular all over the world. It is to be regretted, perhaps, that this type of film has not been exploited more, for the cowboy of the Western ranges is peculiar to America and provides romance, adventure and movement, this latter being the very life-blood of the motion picture.

The musical comedy and revue phase, again, has been overdone, and spectacle has been crowded upon spectacle, crooner upon crooner, until one has grown disgusted with the superficiality and the noise. " Broadway Melody " of 1929 was an excellent film, and there is no doubt that the sound picture provides ideal opportunities for the production of musical films. The unending successors to that film, however, have usually been of an unbelievable mediocrity.

The gangster film has travelled a crooked path, and we have had phases within a phase. There was the time when the gangster was a creature of adventure and even of romance, but that has changed, so that today we are regaled with the awful results of a life of crime. The rattle of machine-gun bullets has been dinning into the ears of audiences for a long time, and even yet are not stilled. This type of film is one of the few produced by America that fulfils a sociological function, and there can be little doubt that the films of the later phase have been produced with the object of minimising gangsterism. Such films have little or no value in England, however, and this is an excellent example of one of the disadvantages of American dominance of the world markets.

Historical films have also had their fling, and it is a perpetual source of wonder to many Englishmen with some acquaintance with their country's history, that producers should seemingly wilfully go out of their way to be inaccurate. It has been suggested that some special censorship should be established with regard to historical films, and this would certainly seem to be necessary.

Any cinema-goer of more than a few years' standing will remember, looking back, that films have always been

cut to type, the type of the moment. Drawing-room comedies, historical romances, usually neither historical nor romantic, gangster films, musical revues, have all had their fling, only to depart when a new pattern is suddenly discovered. Actors play over and over again the same type of character, and only the few have succeeded in dragging themselves away from stereotyped parts. It can be done, but only rarely, and there is no doubt that actors, actresses, producers, directors and inevitably, therefore, the public, are all helpless before the gigantic, soulless machine that is Hollywood. Individual genius and creative effort are stifled, and the film has been degraded to the lowest level.

PART II

TECHNICAL

THE EVOLUTION OF THE FILM

There is no art with which the art of the film may legitimately be compared, but the vast public which patronises the cinemas of the world has definitely realised that the film has rightfully taken its place among the arts of the world. More effectively than any other medium can it bring happiness and laughter into the lives of millions, more swiftly than even the greatest literature can it waft the man in the street to a dream world, for great literature requires a taste and a facility not too common today. The fact that hitherto, with few exceptions, the film has been degraded to its lowest level, affording only mediocre entertainment, makes little difference to its vast potentialities.

The film is not only a new art, but a strange one, and its early devotees were forced to gain their knowledge through hard and bitter experience. Primarily a film is a succession of pictures, of scenes, and these must be so woven together that they tell a complete story with the emphasis upon those parts of the story requiring emphasis. The dialogue film has considerably altered the technique of the film, as will be seen later, and it may be said without fear of contradiction that the silent film demanded a greater skill on the part of all concerned in its production. The perfect silent film, merely from a technical point of view, would be that film that required no sub-titles, but although some few have been produced at various times, it was found essential to use some words in the majority of silent films.

A short consideration of the difficulties attendant upon producing a succession of scenes, unaided by dialogue, that would clearly convey a story, will convince any sceptic of the right of the film to be termed an art. The sound film is a comparatively recent innovation, and it is first necessary to consider the evolution of the film during those many years that speech was denied to the actors. Necessary not only from a chronological point of view, but also because the basic principles discovered and attempted during those silent years are still fundamental, and thereon are based all modern productions.

As has been stated, the very early film technique was the technique of the theatre, and many films were produced in a small number of scenes. This was natural, for the theatre was then the only form of dramatic art, and a realisation of the basic difference between the theatre and the cinema came only gradually. The theatre is restricted by certain physical conditions that modern ingenuity can alter only slightly, whereas the film may range the continents of the world, is completely unrestricted as regards location, and can transfer an audience with ease from a barren desert to a luxurious hotel, keeping all the time the sense of perfect illusion. This was one of the first differences between the two forms of drama noticed by producers, and though it may seem obvious to us today, little imagination is needed to realise the wonder of the discovery in the years that saw the birth of the film.

The ability to move the camera was another accomplishment that must have intrigued the early producer, and though to us it may seem impossible to consider the production of a film that did not make use of this mobility, it was not until well into the twentieth century that its possibilities were properly realised. Angle photography was made possible by the mobility of the cameras, and the significance of this technique would be obvious to everyone who could view a film with every shot taken from the same angle. Not only was angle photography made

possible by this means, however, but by moving the camera closer to the object or person being photographed, considerable detail could be viewed by the audience. The close-up, now common enough in every film, was at first considered grotesque, but even the veriest layman today understands its significance.

It was D. W. Griffith who first realised the possibilities of the close-up, and it was he also who first used the cut-back, by which a scene or detail already seen by the audience is once more introduced to add emphasis. Emphasis may be said to be the key-note of film technique, and many and varied are the methods by which it is attained. On the legitimate stage this emphasis can be obtained by only limited methods, but the fluidity of the film enables the producer to convey emphasis in many ways. The fade-out was another technical accomplishment with which D. W. Griffith must be credited, and was the first attempt to write *finis* to a scene or a complete film without leaving a jarred feeling in the minds of the audiences. The fade-out has been extended, and a common technique in the cinema of today is the dissolve, whereby as one scene is faded-out another gradually takes its place, so that at one time there are two scenes, both out of focus, filling the screen.

Comparatively early in the evolution of the film it was realised that time would mean nothing to a cinema audience, and that whereas in the theatre every change of scene entailed tedious waiting for the audience, with the film it was different. The camera could be stopped for any length of time, but when it was re-started the resulting film would bear no indication of the time interval when it was motionless. This simple fact has had the utmost effect upon film technique, and is an advantage inherent in the film. Its results were manifold, the most important being that producers began to insert many more scenes into their films, not being tied down to a certain maximum number as are theatre producers. Thus the basis of film technique became the production of

quick, short scenes, which gradually grew in number until there were hundreds in every full-length film.

It will be seen, therefore, that from its early history the art of cinematography has truly been the art of moving pictures, and it cannot be too strongly emphasised that movement is the essence of every film. This can be taken too far, however, and though the duration of any scene in a film must be in strict accordance with its importance to the sequence of the story, there is a minimum duration for every scene that must not be diminished. It should be noted, incidentally, that the term scene when used in this work in connection with the film is intended to define any one camera angle. That is, a sequence photographed in an hotel bedroom may consist of twenty scenes, though the background remains the same throughout the sequence. The term " shot " has been evolved to cope with this difficulty.

A few examples will be sufficient to portray the significance of some of these fundamental technicalities of the film. The film may be concerned with a race on the Brooklands car-racing circuit, and as one watches the giant cars hurtle along one may be thrilled. But, if the camera angle is not changed frequently, the spectacle becomes boring. The technique of the film allows for this, however, and no shot is allowed to last longer than it takes the average spectator to become irritated. Many other types of shot may be utilised. There may be a detailed shot of the spinning hub-cap of one of the monster cars, a shot photographed from underneath so that the racers appear to pass over the camera, a close-up of a driver's face. These changes may be rung so skilfully that the interest and thrill of the race are enormously enhanced.

Emphasis can be strongly conveyed by means of the detail close-up and the dissolve. Recently it has been used more consistently, and once again is fulfilling a fundamental possibility of the moving picture. In a picture dealing with war there may be a shot of a soldier

blowing a bugle. Gradually the camera moves forward until a close-up of his face fills the screen; yet farther it moves until only a gigantic bugle-mouth can be seen. This dissolves into the mouth of a gun, and the emphasis has effectively been laid on just the one aspect of war desired by the producer at that moment. There are hundreds of other comparisons that may be made effective by this simple device. The difference between a bread-knife and a murderer's weapon, between the occupied and the unoccupied, the empty and the full, the circle and the square, in fact infinitely can the process be prolonged.

The art of cutting and editing films has evolved simultaneously with other technical developments. Montage is the term used for this editing, and accurately expresses the process, for essentially any film is built up. Because scenes are photographed in a certain order, that is no reason why they should be viewed in that order by an audience. As can be seen, therefore, there are two important reasons why montage is so vitally important, first because it enables a producer to save time and money by filming all that is needed of one scenery set at one time, cutting and altering the sequence of the shots later, and secondly because the film may be edited for public consumption during this process. Few can visualise exactly what a film in which they are either acting or directing will appear when projected upon a screen, and skilful cutting enables the unsatisfactory parts to be eliminated, emphasis and continuity to be preserved and a general polish to be imparted.

Technical inventions and improvements have naturally played an enormous part in the evolution of the film. The most far-reaching of these was undoubtedly the introduction of the sound film, which will be dealt with later. In 1920, the film entitled " The Cabinet of Dr. Caligari," in which appeared Conrad Veidt, was released and immediately had its effect upon Hollywood. Realism was deliberately ignored, and the whole affair was fantastically grisly. It was designed to suggest what people were

feeling, and the use of the various technical methods already discussed was masterly.

In " Metropolis," another German film, the flying-camera was used for the first time, and though in this particular film it was used because it was the only method whereby the director could convey his meaning, it was adopted by Hollywood and used on every possible and impossible occasion. The introduction of colour is another technical achievement that bids fair to affect the film, not as regards its essentials of movement and fluidity, but more, perhaps, as regards its pictorial composition. It is difficult as yet to prophesy its effect upon technique, although methods of emphasis effectively used in black and white may no longer have the same effect in colour. General adoption of colour may well bring with it a new lease of life for the natural film, that is, the film based on natural events and with natural backgrounds. These are obviously more suited to colour than are interior scenes, though it must not be forgotten that, as always before, Hollywood will certainly now use colour in season and out, and will therefore deliberately choose themes that are better expressed in colour than in black and white. It seems certain that the next year or two will bring a greatly increased production of natural films.

The introduction of dialogue was an epoch-making event in the life of the cinema. It took the public by storm, although not so the experts, who had anticipated such an invention many years previously. It changed the whole outlook of the cinema and of the cinema-goer. Some said that it lent vitality to the silent film, though it is to be doubted whether this was always the case. At any rate its introduction completely changed film technique and brought the cinema much nearer to the theatre, not wholly to the former's advantage. In the days of the silent film it was not possible to compare the cinema and the theatre, so different were they, but as soon as speech was introduced on to the screen, such comparison became possible, and, forgetting the different conceptions of the

two forms of art, and remembering only their common ability, speech, criticism was levelled at the film as being only a poor imitation of the legitimate stage. The cinema brought this criticism upon itself, and though materially it has done the film magnates of America little harm, from an æsthetic point of view it is to be doubted whether the introduction of sound was any advantage to the film.

Neither must it be forgotten that sound has seriously interfered with the universal appeal of the film, and attempts to issue bi-lingual films have not met with outstanding success. The silent film could be understood and appreciated in every country in the world, but not so the sound film, for not only is there the language difficulty, but even if an audience could stop its ears to the sound effects, the film itself would not convey the story as did the silent film.

This is an excellent method of expressing the fundamental difference between the silent film and the sound film. The former conveyed nearly the entire story by means of its sequence of pictures; the latter, having at its command speech, makes no attempt to achieve this object. From being essentially a pictorial art, necessitating amazing skill on the part of all concerned in its production, it has become a mongrel and has inevitably lost in rhythm and pictorial value. Lately, however, there have been indications of a reduction in sound effects and speech, and eventually the film may achieve a sound technique which will enable it to grasp the advantages of speech and yet retrieve some of its lost art. It is to be noted that not only does speech render the art of story-telling by sequences almost unnecessary, but an audience is now incapable of seeing more than about three-quarters of any film, owing to the attention being distracted by the sound!

One of the immediate effects of the introduction of speech was felt by the actors, many of whom discovered that their voices were not suitable for reproduction. This resulted in the elimination of many actors who were experienced in the specialised art of the moving picture,

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and the introduction of stage actors who had every qualification as far as speech went, but no experience of acting before a camera.

The type of film produced under the new conditions also underwent a radical change, for obviously themes and treatment suitable to the silent film were not suited to sound. Many of the plays of English and American dramatists were seized by the producers, but few were successfully screened, for preoccupied by the all-absorbing development of sound, producers failed to realise that because sound had been introduced that fact did not necessarily out-mode the technique painfully evolved in the silent days. The art of transforming a brilliant play into a brilliant film is perhaps more difficult to undertake than an original conception.

A third result of the introduction of sound was the greatly increased costs of production, and this factor has had a great effect upon the evolution of the film. In the old days it was possible to estimate profits more nearly, and the gamble was not so great. Today every film, good, bad or indifferent, costs many times as much money as a silent film, and producers are not so willing to take risks. This has inevitably resulted in even greater stifling of individual genius, and the majority of productions are committee-made, not even their original conceptions being the work of one man.

No survey of the evolution of the film would be complete without consideration of the work of Walt Disney, whose cartoons have become world-famous. Cartoonists were at work many years before Disney became known, but none have approached his standard, and it is probable that the cartoon film of the future will play an important role in the evolution of the cinema.

Disney's short cartoons have been produced for some years, and in passing it is worth remarking that the characters he has evolved, including Mickey Mouse, Minnie Mouse and Donald Duck, have very definite personalities, so that it is with something of a shock that

one realises that they are only animated drawings. This feat of itself is worthy of recognition. In 1938 was produced for the first time a full-length cartoon, " Snow White and the Seven Dwarfs," and although some exception may be taken to it on the grounds of it being a warped conception of the famous fairy-tale, that is not our concern at the moment, nor does it in any way detract from the excellence of the film from a technical point of view. When considered in detail it is an amazing achievement. It took three years to make and involved the drawing of over two million individual pictures. It takes nearly an hour and a half to project, and is photographed in Technicolour, the new multiplane camera being used, which was devised by Disney to overcome the lack of perspective normal in the ordinary animated cartoon. Seven different planes are used, and as with a stage, this gives the effect of depth.

A variation of only one-hundredth of an inch in the drawings results in jerkiness of movement when the film is projected, and this was noticed after " Snow White " was well under production. In order to overcome this the drawings were enlarged from two inches to eighteen inches in height, the larger scale making it possible to achieve greater precision of line. This gives some indication of the difficulty facing the animators, and the amazing fluidity of movement apparent in the film is the more to be wondered at. Special mention should be made of the Disney animals, especially in " Snow White " and " Little Hiawatha." He has achieved an effect impossible to put into words, and his work as a whole points to vast possibilities for the animated cartoon.

Paradoxically it was the introduction of sound films that enhanced the value of silence, and this is being more and more exploited by producers. Sound is being used less and less, and it has been said that Hollywood is working to a new schedule of seventy-five per cent. pictorial value and only twenty-five per cent. sound. It was inevitable that in the early days sound should have been

used too much, and it is possible that in the future it may become incidental. If this can be achieved the film, no longer either a sound film or a silent film, will have reached its goal. The silent film was not entirely satisfactory, but neither is the " talkie," and further evolution is necessary.

Rhythm has always been the aim of the film producer, an art which reached perfection in the silent film, but which was drastically affected by the introduction of sound. Speech must inevitably interfere with perfect rhythm, but there is every indication that this essential of the film, a quality which no other art possesses to such a marked degree, is being considered more closely. Rhythm is not easy to introduce, though sometimes a writer will accidentally hit upon a story that exploits the quality, or a director will be able to change a story so as to introduce the maximum rhythmic quality. The fact remains, however, that rhythm is satisfying, ministering to an unconscious but fundamental urge in the human race. The film is ideally suited to its exploitation, but if a perfect technique is ever to be evolved extensive research will have to be undertaken in order to make use of the possibilities.

PRODUCTION: GENERAL

The producer of a motion picture is responsible for the complete supervision of the various complicated processes which are inevitable to the production of the smooth, technically perfect film which is viewed ultimately upon the screen. His responsibilities are immense, and his qualifications unusual. He must be able to control human beings, and sensitive human beings at that, for film stars are born temperamental and steadily play on that fact throughout their lives; he must be a diplomat, with the patience of Job; a general, capable of handling the masses; a financier, able to understand the intricacies of film finance; a gambler, extravagant when necessary, and yet cautious on occasions. Above all he must have the creative touch.

The producer is the driving force behind the production of every film, and he controls the entire policy of a studio. His imprint is upon every film that leaves that studio, although, as has already been pointed out, there is now a tendency towards committee-made films, and the producer of the future may not have so much power as in the past. At the present time, however, it is he who is ultimately responsible for the film he supervises, for its significance or non-significance, and, what is more important to the backer, for its financial success or failure.

The essence of every motion picture is unity, and the producer is the co-ordinating element, welding the innumerable factors into one unified whole. The wise

producer understands and makes allowances for the artistic temperaments of his cast, and though it is essential for him to be an unquestioned dictator, he achieves results more readily by the use of the velvet glove than the iron hand.

The routine of any large studio is extremely complicated, but no survey of the film would be complete without consideration of the policy and methods of production. Policy is fixed for at least a year ahead, and the producer understands this policy, the reasons for its formulation and the amount of money set aside for the production of certain films. Each studio has its own team of players, though outside actors may be brought in if necessary. The producer, however, has to be familiar with the team, and understand their capabilities well enough to judge the parts for which they are best suited. The critic will not always agree with the decisions, but on the whole one is forced to admit that surprising skill is displayed in this connection.

The films produced by each studio may be classed as Grade " A " and " B." The former will consist of those films which the executives are prepared to back heavily, the important films, possibly adaptations of successful plays or novels, and it is to be noted that recently adaptation has been more skilful and more successful. In these films are featured famous stars, and the money apportioned to the productions is far greater than that available for the Grade " B " films. These latter consist of second-rate films, and in them unknown players and directors are given their chance to make good and come to the front. Many stars have sprung to fame overnight, without ever appearing in a Grade " B " film, but on the whole the climb to stardom is more gradual and is via the Grade " B " route. Remarkable profits are not expected from such films, and if receipts cover expenditure it is considered satisfactory. Mention has already been made of the manner in which such films are foisted on to the public, and though experiment with talent is necessary

there seems no good reason why the results should always be exhibited to the public.

The number of executives in any large studio is very great, and conferences are naturally essential. Hollywood delights in conferences, it would seem, though from the garbled accounts of such affairs that reach the ears of the public little good appears to come from them. We may assume, however, that exaggeration has played a large part in such accounts, for the technical standard of American films is too high to make such stories plausible. These executives include the chief producer, the story editor and a host of assistant producers. The chief producer understands the policy of the studio for the coming year and the films that are scheduled for production, and it is he who allots to the various assistant producers the parts they will play in the campaign, and the films they will individually produce.

General details, such as the amount of money allotted to each picture, the time when shooting is to commence and the casts, are already decided upon, but each producer is thereafter responsible for the films allotted to him. Few cinema-goers can realise the intricate organisation necessary to the production of the hundreds of films that pour on to the market each year, and from this brief survey of the initial steps, no consideration having yet been given to the technique of actual production within the studios, it will be seen that there is more activity behind the screen than is obvious to the layman.

The selection of film-stories is intricate work, and obviously the most important part of any production. A poor story may be handled so brilliantly that the resulting film may be better than its plot, but never can a bad story result in a brilliant or outstanding film. There are three alternatives open to the producer looking for suitable stories; he may film the published work of authors and dramatists, he may use short stories published in the magazines of the world, or he may have recourse to his

scenario department not only for the treatment of the stories, but for the stories themselves.

The first alternative is by far the most expensive, especially if the author of the published work is well known and the book or play has been eminently successful. Several studios may be contemplating the purchase of the film rights, when naturally the price rises. The matter of adaptation has been considered previously, and though there have been signs of improvement recently, it cannot be said that even the majority of adaptations have been successful, certainly not as successful as when presented in their original form. There have, of course, been exceptions, but rarely have the resulting films been justified, from an æsthetic point of view. From the financial point of view they have probably been satisfactory, for a producer anxious to film a successful novel understands that although the film may be poor, the reputation already secured by the original work is sufficient to bring in the receipts.

There are not enough successful novels or plays produced in the course of one year, however, to satisfy the demands of the huge mass of cinema-goers, so that the producer has inevitably to seek elsewhere for the greater part of his material. Short stories can often be adapted to the requirements of a film, and many thousands are purchased every year by film studios. Their adaptation to film purposes seems to be easier than in the case of either novels or plays, probably due to the fact that the short story is alive, quick, full of movement, whereas these are not essentials in a novel, and a play requires most drastic adaptation.

Short stories purchased for such a purpose, however, have to be treated by the scenarist, though it is not so much a matter of adaptation, for usually the story merely provides the inspiration, the basic theme of the film. However the material is secured the scenario department has to handle it and turn it into " shootable " script. If the third alternative described above is used, then the

department provides both the original conception and the treatment.

From what has already been said regarding film technique it will be obvious that special treatment is always necessary before production can commence on any theme. The complete film will consist of hundreds of scenes, and the camera-men cannot decide on the spur of the moment either what scenes it shall include or from what angles they shall be photographed. The expert scenarist, however, can produce a script with minute details inserted, a complete plan of action, from the first sequence to the last, so that it is only necessary for the camera-men to follow the plan. It is not always that this plan is strictly adhered to, and on many occasions, for one reason or another, it is found necessary to alter the scenario. The fact remains, however, that the production of a scenario is a specialised work, a fact that might be remembered by those aspirants, who, without any experience of the technique of the film, optimistically imagine that they have only to sit down with a pencil and paper in order to produce a workable scenario. A minute number of such people might be able to achieve this object, the vast majority will find it beyond their capabilities, and that is all there is to it.

Large American film-producing concerns keep a staff of trained writers always within call; not as scenarists, but merely to think of suitable stories. A writer may not produce one suitable story in six months, but if at the end of that time he is visited with an inspiration that results in an outstanding film he will have more than paid for the money expended in salary. It may appear soulless, but it is efficient, and whenever considering the American film and American methods, it is always as well to bear in mind the enormous number of films produced from Hollywood in the course of any year.

There are three phases in the production of a " shootable " script, the first outline of the idea, the treatment and the final scenario. The treatment may be, and usually

is, very detailed and may run to a hundred pages or more. The original idea may be the conception of one man, but the final scenario is usually the work of several experts working in conjunction. There will be a construction expert, a dialogue expert, a continuity writer and probably one qualified in camera work. Only thus is it possible to produce a technically perfect motion picture, and this attention to detail has resulted in America leading the world in this respect. It is only recently that England and other European countries have commenced to approach this standard, and that only because they have at last consented to learn from Hollywood.

When the scenario is completed there is the matter of casting to be considered, and the manuscript is forwarded to the production department. All expenses incidental to the production of the scenario are considered, including the cost of the original material, and if the total does not agree with the original estimate there will have to be paring. This may easily result in the production of a poor film, even though the story material is good, and not only will salaries be cut down, that is, less expensive outside players be used, but other methods of cutting costs be considered.

The completed scenario, or screen play, must be submitted to the Association of Motion Picture Producers, which has the right to expunge any objectionable matter. Only when this process has been carried out can shooting commence.

The details of studio technique will be considered in a later chapter, and at the moment we are only concerned with general considerations. The completed sequences are sent to the cutting-room, where drastic editing is undertaken. The negative is invariably over-length, and in the cutting-room the various sequences are reassembled in their proper order, and a general polish imparted. It has been said that the elimination of scenes and sequences is as important as putting them in, and a film editor is

never afraid of cutting scenes. More films have been ruined by under-cutting than over-cutting.

When cutting and editing is finished the film is still not ready for general release. It must go once more before the Association of Motion Picture Producers, and only if it is passed may it be issued to the public. It will also be necessary for the film to be passed by the censors of the foreign countries in which it will be exhibited, and this is by no means an automatic process. It is impossible for an editor or producer to gauge feelings abroad, and many films seemingly innocuous have been banned in certain countries for reasons not apparent to the American or English producer. " The Informer," an excellent film, was banned in Peru, because it depicted rebellion against authority, whereas it was acceptable in Hungary. Hungary, however, banned " Green Pastures," which Peru accepted. These examples might be multiplied indefinitely, and in most cases the reasons for banning a film are quite adequate, when the special circumstances are taken into account. It is not possible for producers to estimate the reception a film is likely to receive in any country, however, and the risk adds considerably to the speculative aspect of film production.

The last department to handle the finished film is the publicity department, which is charged with the task of whetting the appetites of the waiting public. Their methods are well known, and not always in the best taste. Throughout the year it is their duty to stimulate public interest in the stars, mainly by feeding the hungry mouths with tit-bits of palatable scandal, and before the release of any important film the publicity department of the studio in question will attend to the matter of relaying particularly interesting news concerning the players featuring in the film.

The " trailer," now common in all cinemas, is designed to whet the appetites of the public, and comprises the colourful and exciting parts of the film to be shown in the near future. It must never, however, give away the story

or detract from the surprise value of the film itself. Some-times bad slips are made in this connection, and the plot is thoroughly given away, but this occurs only rarely. It is to be doubted, however, whether the " trailer " has very much value, for it is to many a source of irritation, merely delaying the projection of the film for which they have attended the cinema. It is certainly not desirable to show two " trailers " in one programme, although this practice is now becoming common.

PRODUCTION: TECHNIQUE

Studio technique may be said to commence with the construction of the scenery sets, and it is in this connection that the work of the art director is important. He closely studies the screen-play, not from the point of view of either the producer or the camera-man, but in order to gain an idea of the scope and setting of the production. From this he builds up his scenery plan, and submits his estimate of cost and space, and later, when the scenario is detailed and complete, is able to draft an exact plan.

There are many factors which he has to take into consideration apart from the actual construction of the sets. In period films he must be absolutely accurate as to detail, and this also applies to films of foreign countries. Research, and extensive research at that, is necessary, and great care is taken to ensure accuracy of detail. Large studios have their own research departments, and here is another phase of the film industry that is unrealised by the man in the street. Glaring mistakes have often been made in period films, but on the whole it must be admitted that the research departments of the Hollywood studios are amazingly accurate.

Designs are prepared by the art director in the first place, but are handed later to individual directors, unit art directors, who each contribute to the detailed result. Complicated lay-outs are prepared for the use of the producer and director, and include scale drawings and elevations of the various sets. Watercolour sketches are prepared showing the lighting necessary, a matter which

will be considered in more detail later in this chapter, and no trouble is spared at this stage of the proceedings. Accurate models are constructed, which are used by the construction department to gain a better idea of what exactly will be required of them.

An important factor in designing sets is the amount of floor space available, and the introduction of sound has complicated this problem, for no two producing units can now work in close proximity to each other, for the microphones are very sensitive and will pick up sounds from the other unit. Organisation is necessary to ensure that sufficient space is allotted to each unit, but that valuable accommodation is not wasted. These considerations have to be borne in mind when designing sets.

Unit art directors report to the supervising director and produce their finished work for his approval. The designs are then passed by him and are nearly ready for the construction department to work upon. Not quite, however, for though the designs of the sets have purposely been drafted very fully, not all of each set will need to be constructed, as not all will come within the view of the camera lens. Camera angles, therefore, have to be worked out very carefully, so that no unnecessary waste need occur.

Composite photography has affected set designing, for pictorial illusions can be created without recourse to expensive scenery. One photograph may be superimposed upon another, so that, perhaps, if a scene is taking place on the steps of a house, the construction department will build only a few feet of the outside wall, and a photograph of an actual house is superimposed upon the negative so that to all appearances the whole house was photographed at one time. There are other tricks that can safely be used, and it is a great convenience to be able to photograph a character in the studio and then superimpose a street scene so that when projected the character appears to be in the street. Such examples can be multiplied indefinitely.

The cutting of sets is never undertaken unless the illusion can be adequately sustained, and there are occasions when though a set could be cut the strength of the scene would not be so great as if a complete set were built. This, even though the camera does not actually view parts of the set. In these cases the full set is built, and the art director must be able to judge the possibilities and dangers of cutting sets.

Strong as walls, stairways and pillars may appear when they are projected upon a screen, they are built of only the flimsiest materials, and many are the tricks adopted to create pictorial illusion. Depth, for example, may be simulated by various methods without actually increasing the dimensions.

Backings, that is, distant scenes, viewed, perhaps, through a window of the room in which the scene is actually taking place, are usually constructed from enlarged photographs, and any actual objects that may be necessary, such as illuminated signs, must always be in the right proportion. Working plans are now drafted from the approved designs, and detailed estimates of cost are prepared. These estimates must coincide with those originally approved, or, as in the case of larger estimates, costs will have to be cut in one way or another. Only now can the actual construction of the sets take place, still supervised by the unit art director.

The next process is the furnishing of the sets, and yet another department has been created to deal with this matter. The art director designs special furnishings, that are often required, although a large stock of ordinary pieces are kept, from which selection may be made. The head of the department collects all the necessary equipment, which will include items other than furniture, and detail is closely watched. The art director always has the final decision.

Colour was as important in the days before the introduction of the colour film as it is today, although there are still many more films photographed in black and white

than in colour. Harmony must still be created, and it is possible that with the steady growth of the colour film the problem of colour will become even more important.

The lighting of any motion-picture set is of paramount importance, and the introduction of sound has even altered this technique, for in the silent days arcs were used almost exclusively, whereas today incandescent lamps are universal. The reason for this change is the fact that arcs make a noise, and the microphone will pick up the sound. During silent sequences, however, arcs are still favoured, but incandescent lamps are used for sound sequences.

Broadly speaking there are two methods of lighting used in studios, and they are usually used in combination, though there are exceptions. These two methods are flood-lighting and spot-lighting. The former illuminates the whole of the set, the latter picks out the characters, or in some cases the objects that require emphasis. There are other methods, but these two constitute the foundation of set lighting.

It is the problem of shadows that must always be solved, for shadows are automatically created as soon as a light is switched on to the set. These must be obliterated, and this can be done only by using another light that will kill the first shadow. It can be judged how difficult it is to secure adequate lighting and yet avoid shadows. Weird effects can be obtained by " stunt " lighting, and upon occasions may effectively reproduce the atmosphere required. Atmosphere can be created or ruined by the lighting, and much experiment is frequently needed before the correct atmosphere is secured. It is obvious that a scene laid in a night-club, with its glitter and superficial gaiety, requires entirely different lighting from a scene laid in a peasant's hovel; the one must be metallic, gay, brilliant; the other subdued, dingy. Between these extremes, however, lie innumerable other effects, and the electricians, working under the camera-man, who in turn must be controlled to some extent by the director, must be

able to produce the lighting necessary to procure the right effect.

When the sets are constructed, the lighting adjusted, comes the actual photographing, or shooting as the jargon has it, and consideration must now be given to the work of the camera-man. Cinematography is by no means merely a matter of pressing a button and watching the wheels go round, though there is, perhaps, less excuse for mistakes in camera technique than in any other branch of film work. The cameras of today are equipped with many and varied devices that render mistakes less likely, but although it would appear that photographically a good film merely depends upon the correct setting of the adjustments of lens, speed controls and other devices, that is not quite all the story. It is difficult to say precisely what makes a good camera-man, but he is no less an artist than the other executives concerned with the production. He is the link between the director and the public, the man who transposes the conception of the artist into the reality, who is responsible, directly, for the miles of celluloid film that are projected in the thousands of cinemas of the world.

In few other arts is the artist divorced from the medium of his art, but in cinematography he must rely upon another human being to place his conceptions on record. The director of any picture may take every precaution to ensure that as little change as possible takes place during the transition, that it is his conception that is being recorded upon the film, but nevertheless, much still depends upon the camera-man. Sets are constructed with the greatest care, scenarios are prepared in the minutest detail, the cast is selected by the director, everything in fact is done to enable him to formulate his own conception and give play to his own creative genius. Even so, however, he is not actually handling the camera, which despite its mechanical precision is a delicate instrument capable of interpreting moods either correctly or incorrectly. Much depends upon the man in charge of that instrument.

E

It must always be the man in charge of the camera who works out the various angles from which the shots shall be taken, always, of course, in close co-operation with the director, but he is the man with the technical knowledge, who knows exactly what he can make his instrument perform. It is possible for two identical scenes to be photographed with the same camera but with very different results when they are projected upon a screen. In the one a spectator will feel that he is taking part in the scene, in the other he will be conscious, the whole time, that he is viewing a pictorial illusion. Even close examination of the film will make it difficult to state the precise difference between the two, and that difference may be compared with the difference between two styles of writing. The camera-man must be able to interpret moods.

From the very beginning of moving pictures the progress of the art has been closely allied to the progress of the film itself. Emulsions have been improved, becoming faster, so that not only is less light required to achieve a sharp photograph, but more graduations in light and shade have been made possible.

Since the early days of the cinema, the years have brought a great increase in the colours to which the film is sensitive, and recently the panchromatic film was produced which is sensitive to all. The film used in the modern cinematograph camera is sensitive to all colours, views them in the same relative strengths as the human eye, and produces them in black and white. The blacks and the whites, however, are graduated and shaded according to the colours of the original scene. It can better be understood, now, why colour in set construction is so important, even though the resulting picture will be in black and white.

The introduction of infra-red photography has also had its effect upon cinematography, for it is now possible to photograph scenes hidden in haze or the darkness, and to produce realistic night scenes in the broad daylight. These innovations have made the work of the camera-man

more simple in some ways, and yet more difficult in others. To exploit them to their full requires the utmost skill, and so clever is the camera-man of today that he can achieve the most amazing results. If an ugly woman cannot be made to appear exactly lovely, a lovely woman can be transformed to a creature of fantasy.

The film itself is only the medium whereby the conception of the director is conveyed to the audience, and is not an end in itself, except, of course, in films of pictorial beauty when the photography is the only reason for producing the film. In the story-film, however, photography must never be so good or so bad as to draw attention to itself. It is no more than a means to an end. The camera should awaken in an audience the exact emotional reactions demanded by the theme of the story, and furthermore should awaken those reactions without the audience being aware of the skill that is achieving the results.

There are many technical methods open to the camera-man when filming any scene, and the right choice of method makes a great difference to the result. As an example we may take the close-up, when at least three methods may be used to achieve, on paper, the same result. A standard lens may be used and the camera be brought close to the actor; a longer focus lens may be used and the camera be moved farther back; or a very short focus lens may be used and the camera brought even nearer to the actor than for the close-up taken with the standard lens. On paper the results will be identical, that is as regards the size of the image reproduced upon the film. In practice, there will be marked differences. The first method will result in the background being seen, but out of focus; the second, using the long focus lens, will render the actor's image very sharp, but the background will be neutral; the third method will render the background more in focus and therefore more emphasised.

It will be seen at once that the choice of these three

methods must depend entirely upon circumstances. If the background is to be emphasised, as under certain conditions it should be, then the third method should be used, and the short focus lens be brought into action. It may be necessary to focus attention entirely upon the character, however, in which case the second method would be the best. For a normal close-up, in which special emphasis is required upon neither the character nor the background, the first method with the standard lens should be used.

This example will be sufficient to demonstrate the scope open to the camera-man, and the necessity for him being in close touch and sympathy with the director and his aims.

There are mechanical problems connected with camera-work, problems made the more severe by the introduction of sound. It has been emphasised before that the slightest sound will be picked up by the microphone, and this necessitates the exclusion of all camera noises. The modern studio camera, therefore, is enclosed in a sound-proof booth, and this booth must be capable of being propelled easily and silently. All manner of special appliances are used in the work, and the camera itself is carried by a crane, which allows it to be manipulated into the various positions made necessary by the script.

It is also necessary to have the microphone adapted so that it may be moved, silently, to any position, never coming in the line of the camera lens. A boom is used for this purpose, resembling a fishing-rod, a comparison that has been drawn many times before.

Make-up is an important part of the technique of film producing, and cannot be compared with the make-up necessary on the legitimate stage. The lighting in a film studio is intense, the incandescent bulbs are huge, often consuming a current of nearly 10,000 watts, and nothing can escape their brilliance. Make-up is a fine art, and in this survey it is necessary no more than to realise its existence.

taken at a later stage, and that scenes are not photographed in the order in which they will be projected, makes it necessary to mark each scene, so that it may be easily picked out and placed in its right order. To achieve this a blackboard containing the number of the scene, the name of the production and other essentials is held in front of the camera, thus recording permanently on the film the necessary details. At the same time a pair of wooden clappers is used to make a noise so that a record is also made upon the sound track of the film. When the film reaches the cutting-room, therefore, the cutters will know at once the place of each scene in the scenario. A mark is made by punching a hole in the film and another at the same place in the sound track, the latter being in the recording-room, and this enables perfect synchronisation to be achieved.

It is not possible to describe many of the processes through which the film passes, nor many of the details of studio work. If several cameras are shooting the same scene, from different angles, intricate organisation is necessary to ensure synchronisation of film and sound track, but such matters are not important to an understanding of the film and its technique. The broad routine of camera-work has been considered, and will enable the layman to gain some small idea of the intricacies of the work.

The film now comes within the purview of the editor, and it was mainly for his benefit that such care was taken to number the scenes and ensure perfect synchronisation between sound and image. It would be very easy to allow the sound of an actor's voice to come a second after his lips had moved, and this would obviously be fatal. The cutter forwards to the editor the various scenes separately, having cut and rewound the shots, and the scenes are then projected, the sound strip being projected separately, when the synchronisation marks have been adjusted in each machine.

The editor assembles the scenes in the order of the

script, and he rejects many shots in the course of his work. He, too, is in close touch with the director of the picture, knowing exactly the intention of the creator of the film, and he uses his knowledge and art to ensure emphasis where it is necessary and interpret the feeling behind the production. Yet again there is a gulf between the artist and his medium, for the director, despite close co-operation with technicians, is two steps away from the finished product of his brain. The camera-man and the editor stand between him and the completed film, and inevitably is this so, for the art of the film is so specialised that it is not possible for one man to be efficient at more than one branch of the work.

Much, therefore, depends upon the editor, upon his technical capacity and upon his sympathy and understanding. He, too, is an artist, and yet possessing highly specialised qualifications. He knows the varying methods of ensuring emphasis, understands exactly how to handle to the best advantage the innumerable scenes that go to make up the complete film. He realises how cut-backs may produce emphasis, knows when the dissolve may be used to best advantage, when to use the close-up and the various other methods, some of which have been briefly considered. Much of the negative he rejects, choosing between the results of the various cameras placed at different points on the set. His is the co-ordinating brain, that produces order out of chaos.

With the introduction of sound his work became even more difficult, for now speech also must be edited, and often it will be discovered that when projected, a scene has too much dialogue, or too many sound effects. These can be eliminated from the sound track, if necessary, and new sound can also be introduced. If it is thought necessary to interpolate a sentence, the actor who played the part makes a new recording of the sentence, which is then incorporated in the sound track. It is impossible to detect the interpolation when the film is projected in public.

The production of a modern sound film is intricate to

the highest degree, and though the audiences will not realise the amount of work and organisation that has gone into the production, that is the highest praise, from a technical point of view, any film can have. Simplification, though perhaps desirable, does not seem possible when one considers the technical problems involved. The perfect director would be the man who not only had all the qualifications for directing the production, but was also an expert camera-man, cutter and editor. This combination of qualities is not possible, however, in the specialised world of the cinema, and it is physically impossible for the director to film the scenes and direct them at the same time. The technical success of every film, therefore, must depend entirely upon the close co-operation of executives, close sympathy with each other's problems and ideals, and a complete understanding of the significance of each production.

CHAPTER VI

THE COLOUR FILM

It is some thirty years since the colour film was first sought by inventors, and today it has arrived, and is likely to become so popular that the majority of films will probably be produced in colour in the future. Many disappointments and failures were encountered before anything like technical perfection was achieved. The solution of the problem of the colour film was the result of the work and researches of many men in many countries, and the pooling of their ideas has made the perfect product possible.

Ever since the birth of cinematography there has been a desire to give the film colour and so create a more vivid reality. Unfortunately, as with other technical advances, the first experiments were crude, and the results that were placed upon the market prejudiced public opinion against the colour film. The hues were too garish, and the verdict of the public was almost unanimously in favour of the black-and-white picture. The modern process, however, almost entirely eliminates this garishness, and in the majority of colour films produced in 1938 the colours are delightful and enhance the entertainment value of the film.

One of the first experiments to be carried out was undertaken by the Kinetoscope Company, when they placed upon the market, for exhibition in the famous Kinetoscopes, a film of Anabelle, the dancer, showing her famous serpentine dance. Its popularity was due to the fact that Anabelle wound and unwound from around herself a number of veils, and the effect was increased by a

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series of coloured lights being reflected upon the moving material. When this dance was produced on fifty feet of celluloid film (a considerable length for those days) it was found that much of the charm of the performance was lost because of the absence of colour. The film was therefore coloured by hand, picture by picture, only possible because the length was so small. As films grew in length this process became impossible.

In 1910 Charles Urban went into partnership with an English chemist, Edward Turner, and commenced experiments. Unfortunately Turner met his death in 1911 in an accident in his laboratory, and Urban was forced to procure the assistance of another partner. He discovered Albert Smith, also an Englishman, and within five years they had made the first important step towards the satisfactory production of colour films. The process was named "Kinemacolour," and was the commencement of that cult of hyper-phoneticism which to this day characterises all processes connected with colour photography.

"Kinemacolour" proclaimed its success across the Atlantic, where hitherto it had been regarded with the gravest suspicion. It became popular immediately, but it did not make possible the production of full-length films in colour. It possessed the requirements of a successful vaudeville turn, and was sensational and compelling. Urban's film of the Delhi Durbar was a success because of the subject, and because it was coloured, depicting the pomp and ceremony in all its glamour and glitter. Many of the early colour films suffered from a rash, owing to the uneven colouring of the pictures, and many others were unsatisfactory because the majority of the film was uncoloured and the small portion that was tinted stood out with shattering fierceness. As late as 1927 coloured films were still novel.

Millions of pounds have been spent by private investors, inventors, commercial firms and public bodies in the quest of the perfect coloured film, and at length victory has been won. The enormous sum of five million pounds

is not an exaggerated estimate of the cost of the discovery. The problems to be solved were many and varied. The speed of the emulsions had to be multiplied by at least a hundred, the photo-chemist had to find new sensitisers, and the illumination of the studios had to be increased tenfold before there was any possibility of producing films in natural colours. In the process there was no short cut to success, and progress was very slow and at times discouraging.

The introduction of colour can change a flat canvas into a live one; it can foster a special mood in the mind of the spectator; it can fix attention upon one area of the picture; it can be of the utmost assistance in the impression of sequence in the approach and the recession; it can augment the illusion of depth. The first colour films were unsatisfactory because the producer had a new medium to play with, and instead of the colour being incidental, it was the reason for the production.

It is not possible for anyone unequipped with technical knowledge to understand the processes of colour cinematography, but some explanation of the basis of modern colour work is necessary in order to understand the difficulties which faced the early pioneers and to realise the possibilities of the future.

In 1925 Friese-Greene introduced a method by which alternate frames were stained red and blue-green, thus rendering unnecessary the rotating colour-disk on the projector essential in systems based on the phenomena of persistence of vision. In 1928 experiments were commenced with a rather elaborate prism-divider placed immediately behind the single-projection lens, and in 1931 a beam-divider was completed after many disappointments, and resulted in a double refractory medium performing the work of a dividing element of a beam-splitter for use in colour photography. This was the Raycol Process.

This was followed by the Busch Process, a German two-colour additive process, and later by an American

two-colour process called the Gilmore Colour Process. Two images were photographed side by side on a 35 mm. film by transferring the images lengthwise on the strip, and the process appears to have a close relationship to the Busch two-colour camera and the English Cinecolour camera and projection system. The Cinecolour Process (Dufay-Chromex Ltd., London) is purely British, and nearly two hundred thousand pounds was spent by Sir W. P. Hartley in the early development of this process, and but for his support the method might never have been completed. The camera used was of the beam-splitter type in which a prism-divider was placed directly in front of two objectives. It is unlike the earlier ciné-colour cameras, because in their case the images were turned sideways, one pair occupying a normal frame. The Cinecolour range of colours is the maximum possible with two primaries, the colour possessing that strange and indefinable delicacy and charm of an additive process.

This was followed by a French additive process, called Cinetichrome. The inventor made it understood that previous optical systems possessing several lenses behind a single primary object lens had certain defects. A system of this type consists of one objective lens which gives a real image of any object, behind which is placed a second optical system comprising two or three secondary lenses all placed on one plane. In 1933 Bonneau took three full normal-sized negatives on extra-width film and afterwards reduced them to miniature positives by optical printing, so that they would fit in a normal frame. The reverse process was suggested by Houdeley, whereby three miniature pictures would be taken in the space of a single frame, enlarging them later, printing through colour screens upon lenticular film.

There was then produced the Hillman camera, by Colourgravure Ltd. and Gerrards Industries Ltd., in which Mr. Alexander Korda took an interest. The method used was slightly different from others, two frames being exposed simultaneously, one directly above the

other. An oscillating filter element having three filters, red, green and red, was placed in front of the gate, and each frame was subjected to two exposures through each colour filter.

In 1912 an attempt was made at a three-colour additive process consisting of a beam-splitting method which it was hoped would be free of parallax. The result was failure, however.

" Dufaycolour " Mosaic Process is the only mosaic colour film that has been used with any outstanding success. This process owed its existence to Louis Dufay, and is a departure from other methods. The mosaic consists of lines, the blue and green running parallel to one another and crossed diagonally by red lines. So fine are these lines that there are five hundred to the inch on non-inflammable film base. This process is very satisfactory, and is now used extensively by amateurs with good results. Nor must the Technicolour process, used so extensively by Walt Disney in his charming animated cartoons, be overlooked. It represents a definite advance in the technology of coloured film production and is now extensively used by many professional producers. Colour cameras and beam-splitting methods are so complicated that perhaps the following table will be of assistance:

Systems
1. One lens, beam divided once or twice between lens and film.
2. Two or more lenses without beam division.
3. Two or more lenses behind a prism system for beam division or behind a partially reflecting mirror.
4. Two or more lenses behind an objective.
5. Two lenses behind inclined glass plates.
6. Rotating mirrors for reflection to one or more gates.

There are certain factors to be taken into consideration when debating the future of the colour film. The main problem is cost of production, and it is open to question whether the industry will be prepared to shoulder the huge cost of making the colour film general. At the

present stage in film production it is hardly likely that there will be a revolution in methods of production, and it would seem, therefore, that it will be some years before black-and-white films are entirely supplanted.

In the early days of colour much trenchant criticism was levelled by the public, and though development has been rapid, general public support will only be forth-coming when absolute fidelity is ensured. Success will be attained when a colour film is viewed with no realisation on the part of an audience that colour is present at all.

The landscape and travel film are the two forms in which colour can be used to greatest advantage, and with the universal adoption of colour such films would prob-ably be produced in greater numbers. Colour can upon occasions prove disappointing, and an example of this was in " The House of Rothschild," although it is to be remembered that the introduction of colour into this film was in the nature of an experiment. Unfortunately colour sometimes gets beyond control, and further research is still necessary.

Amateur workers have produced most promising results by using Dufaycolour and Kodachrome. This latter makes use of reversal film stock with five separate coatings, the total thickness not exceeding that of an ordinary coating of emulsion, and the most delightful results have been attained. When first introduced there was some difficulty in obtaining correct renditions of par-ticular colours, but this was said to be due to faulty ex-posure on the part of amateurs.

AMATEUR CINEMATOGRAPHY

The question is often asked, " Is it easy to film ? " Prominent advertisements inform the passer-by that it is, and to a certain extent their assertions are correct. It is certainly not difficult to photograph perfect shots, that is, from a technical point of view. In fact, now that amateur ciné-cameras are in such demand and have had added to them such a wealth of " gadgets," it is almost impossible for the veriest amateur to fail to achieve satisfactory pictorial results. One points the camera, glances at the viewfinder, presses a button, and the result will almost certainly be a clear picture, with discernible figures in motion. It is easy to film, but difficult to make films.

Enough has already been said in this volume to make the difference between these two processes apparent. Any fool can film; only an artist, equipped with technical skill, can make a film, can build up a sequence of scenes that together have a significance, that either tell a story or illustrate a theme. The amateur has not the resources at the command of the professional. He must be his own script-writer, producer, director, art director, cutter, editor, camera-man, and though it is theoretically an advantage for one man to combine these positions, it is not possible for one man to possess the qualifications of all.

Amateur cinematography is enjoying amazing popularity, and this despite the fact that the hobby is still an expensive one. Still photography is being displaced in the

favour of amateur photographers, and cameras can be purchased for very small sums. There is always the matter of running cost to be considered, however, and this is not always taken into account by the man who suddenly decides to adopt the hobby. More concerning cameras, projectors and costs will be said later. The hobby is expensive enough, and possesses enough possibilities, however, to make it worth the while of any amateur to grasp certain fundamental technicalities. The results will be infinitely superior to those achieved by merely pointing the camera and pressing a button.

To many, amateur cinematography is not even a hobby, but after the first frenzied weeks when anything and everything was filmed, takes its place as a welcome adjunct to the annual holiday. The camera is placed in the car along with tennis rackets, golf clubs and bathing costumes, and when the time comes it is taken out, " click " goes the starting-button, and amid roars of laughter the reel is exhausted. When it is developed, probably only half the film is capable of being projected, and the cost is enormous, at least twice what it should be. To the man with plenty of money this may be a satisfactory way of using a ciné-camera, though even so the results will be poor compared with what might be achieved. An understanding of the principles that have been discussed already, and of the methods that will now be described, will result in considerably better value for money.

Few amateurs can aspire to compete with the professional production, but because the money is not forthcoming nor the intricacies of organisation possible, there is no reason why a little thought should not be given to the production of each film and each scene. That small amount of thought will make all the difference between a good film and a bad one.

It is not proposed here to deal with camera technicalities, for it is assumed that upon such matters as exposures the amateur cinematographer is competent. Rather is it

intended to consider the composition of shots and the methods to be adopted if a film is to be a unified whole rather than a collection of miscellaneous scenes strung together in a haphazard manner. Success lies in the word planning, and the capacity for this lies in the human brain and not in the ciné-camera.

An example to illustrate the benefit of organisation can be found in the desire of most amateurs to record their annual summer holiday. We all know that the holiday begins long before it starts, so to speak, and for at least a week before departure the atmosphere of the home is changing, gradually becoming more holiday-like. Psychologists have often pointed out the fact that anticipation is more pleasurable than realisation, and this is exemplified in the case of the summer holiday. The holiday-maker knows this well enough, but the amateur cinematographer is often neglectful of the fact, and does not commence to construct the holiday film until he has arrived at his resort. The consequence is that there is no beginning to his film, and usually no end either, and one is plunged immediately into the holiday scenes of bathing, boating, walking or other pastimes.

If a professional film were equipped with neither beginning nor end, the same amateur would be the first to complain, and yet he cheerfully commits the same error himself times without number. Even the holiday film, depending as it does to such a large extent upon the happenings of the moment, can be planned beforehand. Make sure that the atmosphere is worked up satisfactorily, with a few shots of the feverish preparations for the holiday. Plan the theme of the film and within certain limits take shots that will illustrate that theme. Allow yourself a certain latitude for events you cannot foresee, but make sure that the film shall have unity and theme. There are many themes from which choice can be made. It may be physical relaxation, or the building up of health, or gaiety, or what you will, but plan a theme and stick to it.

It is necessary for the amateur to realise the following factors that go towards the success of any film:

(a) Compilation and preparation of the script.
(b) Camera-work.
(c) Direction.
(d) Editing and cutting.
(e) Acting.

These five points are of vital significance, and should be considered in relation to every film, even when such a light-hearted affair as the holiday film is planned. It is not suggested that the amateur should make himself a nuisance to every other member of the party, but a knowledge of the difficulties attending the making of a unified film will result in more worth-while efforts. Script is not only necessary for a story-film, but for every kind, even the type that consists of a series of events or scenes, such as the travel film or holiday film. True, it is not possible to foresee every scene that will be recorded, but it is possible to jot down on to paper your general ideas of what type of shot you need.

Camera-work is obviously of first-class importance in every film, and there must always be at least one golden rule for every amateur camera-man: "Know your instrument." Its capabilities should be thoroughly realised, as well as its limitations. The various types of shot should be understood, the long-shot, medium-shot, close-up, angle-shot and many others should be considered and their significance realised. Money expended in experimenting with the various types will not be wasted, and it is only in this way that the difference between the shots and lenses can really be appreciated. Before any scene is photographed care should be taken that the type of shot most suited to it and to its significance in the completed film is selected, and this can only be done by planning your script first and working out the shots and the angles.

F

Direction is not necessary exclusively for the story-film but is necessary for every type. It may appear difficult to direct the actions of a couple of cows grazing in a meadow, but it can be done, and the amateur should always direct the actions of any human or animal that appears in any scene. Patience is often necessary, but it is well rewarded, and even if it is found impossible or ill-advised to attempt to interfere directly with the actions of the cows, at least it is possible to wait until they obligingly place themselves in the required positions. At all events, the amateur should ensure that every action is significant and intended by the creator of the film, which in amateur work is the amateur himself.

The following table will be found to include every type of film, though there have been productions combining two or more types.

1. The Montage Film.
2. The Documentary or Reporting Film.
3. The Documentary Film including actors and effects.
4. The Story-Film.
5. The Imaginative or Impressionistic Film.
6. The Trick Film.
7. The Abstract Film.

It will be noticed that numbers 4 and 5, above, are frequently combined, as are other types, but by studying the types carefully the amateur will be in a better position to understand the forms available. Selection depends not only upon the theme and contents of the proposed film, but also upon the capabilities of the amateur himself. The Impressionistic form may be admirably suited to the temperaments of some, but beyond the capacities of others. It is essential to use those forms best suited to temperament, and avoid those obviously unsuited.

The " montage " film is the most popular among amateurs, who use it, often enough unknowingly. In the

usual way a fixed plan is agreed upon, the subsequent filming entirely depending upon this plan. Not so in the montage film, however, when the process is actually reversed, the plan being produced from the shots rather than the shots from the plan. Scenes are filmed as they come, so to speak, and may consist of an amazing variety of events. By expert editing, however, order is produced out of chaos, and a unified film results.

Theoretically this is the easiest type of film to produce, entailing no planning of script, though it must be remembered that it is only pre-shooting planning that is eliminated, and that when the varied scenes are to be joined in a significant sequence planning must be undertaken. In practice the montage film is exceedingly difficult, if a unified result is to be achieved, for it is easier to plan a film around a central idea, to plan a theme, than to evolve that idea and theme from a series of varied scenes. In brief it may be said that this type of film appears easier than it really is, that mediocre results can be obtained with little trouble, but that good results are as difficult as in any other type.

One example will be sufficient to illustrate the methods to be adopted in a montage film. The amateur has at his disposal a variety of shots, taken, many of them, at intervals of some years. They consist of some views of animals at both the London Zoo and the Whipsnade Zoo, scenes at various seaside resorts, views of the Lake country, the Wye valley, the Thames and the French Alps, domestic scenes, and finally some views of London. Let us consider the various methods in which these may be arranged in order to produce a film.

The first method is by taking the scenes in chronological order, and the result will have no unity. Only in domestic matters does such an order have any value or significance, at any rate for the average amateur, and if the shots had all been of the family, in the various stages of their growth, then chronological order would have a great interest.

How else can the scenes be arranged ? Here is one
method:

1. At the Seaside.
2. Scenes from Abroad.
3. A Tour of the Zoos.
4. The Family.
5. London and its River.
6. The Beauty of England.

There is some significance in this order, and types of
scenes have been placed together. There are other orders
possible, however. London and its River might include
the scenes of animals in the London Zoo, and the scenes
of England might comprise not only the views of the Lake
country and the Wye valley, but the Whipsnade Zoo as
well. It is the theme that will decide the order of the shots,
but that theme, in turn, should largely be suggested by the
type of shot available.

Water might well be the theme connecting the above
shots, and all shots in which water appears could be
selected from the various odd reels and made into a
unified film. It will make no difference that some were
photographed in 1932 and others in 1938, nor does it
matter if a shot of a diver entering the water, photo-
graphed at Deauville, is immediately followed by
a swimmer climbing out of the Brighton swimming
baths.

It will be seen, therefore, that the montage film affords
infinite scope, and that careful selection can result in unity.
Unwanted scenes need not be discarded altogether, but
may either be kept aside for use at a later date, or be
exchanged with other amateurs who need scenes for their
own montage films. It is always as well to have a variety
of shots put by for use in completing montage films of the
future.

The documentary or reporting film is not dissimilar to
the montage form, and again has much to commend it, to

the amateur, for material is lying to hand on all sides. It is necessary to commit a plan of campaign to paper, and unlike the montage film, the shooting should follow the script, not the script the shooting. There must be theme and unity, and every amateur should ask himself the question, " Why am I about to make this film ? " There are many possible answers, but it is the answer that each amateur makes that must affect the construction of each film. In the case of a documentary film dealing with water, for example, the answer might be, " Because I wish to portray the beauty of rivers and seas." In that case, therefore, the whole field of nature will be scoured for material, and with the object of the film firmly in mind, any temptation to deal with other aspects of water will be avoided. There are other answers to the question, however, and it may be that the producer wishes to portray the mighty power of water, showing how it has been harnessed to serve man's purposes. The construction of this film, therefore, will be entirely different from the construction of the first.

These matters may seem obvious, but many amateurs make the mistake of having no purpose in their filming, nor realising the importance of theme. It is not suggested that every film should deal exclusively with only one aspect of a subject, but the producer should invariably conceive a theme before ever shooting takes place. In the example already quoted, it may be desired to show all the aspects of water, and in that case the film will be concerned with the beauty of water, the exploitation of water-power, its uses as a cleanser, the methods of supplying drinking water to great cities, and so on, but the producer nevertheless conceives the theme and constructs his film accordingly.

The documentary film with actors and effects enjoys much popularity, because the personal touch enlivens it and provides the actors with amusement. It is a never-to-be-forgotten thrill when one first sees one's own hideous person projected upon a screen, and there will

be no difficulty in procuring players. It is to be remembered, however, that this type of film is not a photoplay, and the acting and effects are only used to emphasise the facts that the film is reporting. The acting should always be subordinate to the theme.

The story-film, or photoplay, is beyond the capacity of the ordinary amateur, though not of the amateur society. Much has been written in this book concerning the photoplay, enough to indicate the difficulties and technicalities that encumber the path. Many people are of the opinion that such work is beyond the capacities of all amateurs, including amateur societies, that the difficulties are so great as to be insurmountable, and that it is the documentary film that offers the best opportunities to amateurs. There is much to be said for this opinion, and it would seem that except in rare cases the difficulties are insurmountable. Let us consider them for a moment.

There is the technique of script-writing to be mastered, and if not entirely mastered, at least this part of the work of production should be adequately carried out. It is specialised work, however, and inefficiently undertaken will ruin any production. The construction of the sets, the adequate lighting and the camera-work, using cameras that cannot compare with the professional instruments, all present problems that are frequently not considered. Given even the technical knowledge, there are physical difficulties that cannot be overcome. Acting for the films, again, is a very different matter from legitimate acting, which is usually so inferior among members of amateur dramatic societies, and in many amateur photoplays the standard is pathetically low.

For all these reasons the story-film is beyond the range of amateurs, and their efforts could be better turned to the other types of films. It must not be forgotten, however, that the photoplay appeals very strongly to the members of a film society, who are not so interested in the results as in the process. The fact remains, however, that the future of the film æsthetically and

culturally lies almost entirely in the hands of the amateurs, and it is no exaggeration to state that with the continued growth of the hobby they can exert widespread influence upon it. Hollywood caters more than efficiently for the desire for entertainment, and not only must the amateur fail to compete in this field, but it is not necessary. Amateur cinematography provides an opportunity for each aspirant to contribute to the evolution of the cultural film. Who knows what the result may be ?

The impressionistic film attempts to show the inner meaning of actual events, presenting the events in subjective form. Every other artist, and a cinematographer may undoubtedly be considered as an artist, has infinite latitude in pursuing his art, but not so the camera-man. The camera cannot lie, as they say, although it can be made to render impressions rather far removed from the truth, but there is undoubtedly less latitude for the cinematographer than for the painter, the writer or the musician. It is possible, however, to leave the imprint of one's personality upon a film, and five men, shooting the same scene, with identical cameras, will produce five different films. The actions will be the same, but the emphasis will be different.

Everybody, therefore, gaining as they do different impressions of the same events, may construct films differing in their significance, and the impressionistic film depends entirely upon the vision of the man who is using the camera. The amateur who desires to make this type of film must acquire the faculty of seeing events from new angles, must be able to link up events in unexpected sequences, sequences that emphasise their significance. The impressionistic film is not a freak film, though it may easily deteriorate into this. For example, it would be possible to make a film in which every shot was photographed from underneath. The result would be a freak film. But suppose that an unemployed man was a character in the film, a man made bitter and sensitive by the hard blows of an undeserved

fate. Crowded out of decency, borne under by adversity, believing that every man's hand was against him, the camera attempts to find a way into that man's soul, and use his eyes and mind as its lens. A shot of hurrying crowds taken from underneath, the relentless feet passing over the camera, would be significant and would vividly portray the state of that man's mind. The result would be impressionistic, not freakish. The difference is obvious.

The trick film can provide much amusement, but has little significance today beyond the fact that occasionally tricks may be usefully employed in an impressionistic or story-film. Broadly there are two methods of producing trick effects upon the screen, by making use of camera tricks, such as multiple exposures, reverse action, dissolves, and secondly by means of the objects that are being photographed. An example of this second method is to be found in the trick once so common, of making a ruin appear to rebuild itself in the twinkling of an eye. It is quite simple to effect, the secret lying in the fact that the camera may be stopped and re-started without any interval being apparent in the completed film. Thus alterations may be made to the set while the camera is not in action. This effect can also be obtained by means of reverse action.

Most amateurs understand the trick effects of which their cameras are capable, and any who are sufficiently interested to wish to know more about trick cinematography can find material in the many books published to aid the amateur.

The abstract film cannot be attempted by the amateur, and so little is known about it, or can be known about what is not concrete or actual, that it is impossible to write of it. It has no story interest, relying partly upon the rhythm of the shots and partly upon the subjective significance. All that can be said about it is that it might lead us anywhere or nowhere.

We will now briefly consider equipment and the

various sizes of film stock suitable to amateur work. It was the introduction of sub-standard film that spelled success for amateur cinematography, for the cost of the standard size, 35 mm., was prohibitive. There are to-day three sizes produced for silent amateur work, each of which have certain advantages and disadvantages. These sizes are 16 mm., 9.5 mm., and 8 mm.

The 16 mm. offers more scope and better results than any of the others, being larger, a factor that has a great bearing upon the quality of the projected pictures. There is also a wider range of equipment suitable for the size, though it is more costly both as regards the film itself and the equipment. If money is no object then 16 mm. should certainly be chosen.

The other two sizes have a host of adherents, for their cost is approximately one-half of the cost of 16 mm. and the results can be very satisfactory. The 8 mm. size is a little cheaper even than 9.5 mm., though it is to be remembered that the number of films available for hire in this size is somewhat limited as yet. This will not affect the amateur who intends making and showing only his own films, but most will upon occasions require to hire entertaining films, and these people will find themselves restricted in this respect. It is only fair to state, however, that the number of 8 mm. films available for hire is increasing rapidly. This matter is considered in more detail in Chapter X, where projection equipment is discussed.

Comparisons are odious, and it is not proposed to enter into descriptions of the various makes of cameras available for the amateur. It has already been pointed out that 16 mm. equipment is more expensive and offers wider selection, but the instruments designed for the other sizes are efficient as a general rule. The lens is the most important factor in any ciné-camera, and this again depends entirely upon price. A large aperture lens is necessary, and all photographers will know that almost fabulous sums can be expended on a first-class lens. The

sharpness of the image depends entirely upon the quality of the lens, and as good a one as possible should be purchased. F 3.5 is the smallest aperture that will afford satisfactory results, and the larger the better. In the long run, and if cinematography is to be anything more than a pleasant and amusing pastime, the money expended upon a good lens will be well repaid. Extra lenses can be bought and will considerably increase the scope of one's work. Long-focus lens will eventually become essential to every amateur, making the filming of long shots possible, and a telephoto lens will make very distant work possible. A closer consideration of these points will be found in the many books published for amateur cinematographers, a bibliography of which will be found at the end of this work.

An exposure metre is essential, even though the metre is nothing more than a table that can be purchased for a few pence. Every amateur is advised to consider the various metres offered for sale very carefully, and to study the methods of using them, as also he is advised to study the use of filters. There has been a host of books published dealing with these matters, and with the other technical details that it is necessary to master.

An attempt has been made in this chapter to sketch the broad possibilities of the hobby, which taken in conjunction with the preceding chapters should give the amateur some small idea of the difficulties and technicalities of film-producing, and point the way to better results. Every amateur has it within his power to produce good films, films of significance, for though expensive equipment may aid in making a bad film less bad, it will never make a bad film good, whereas poor equipment will never make a good film bad.

It is the amateurs of the world who today control, almost exclusively, the cultural film, and their influence upon it may well be of vital importance in the future.

PART III

EDUCATIONAL AND LIBRARIES

THE FILM AND THE SCHOOL

Some years ago the late Lord Haldane lamented that as a nation we paid little more than lip service to the problem of education, and it is certain that a great deal of talk invariably precedes a small amount of action. Nearly every man and woman, especially if they are rate-payers, consider themselves qualified to express views upon this burning question, nor hesitate to adopt dogmatic attitudes with regard to teaching methods, a subject of which they must be profoundly ignorant. Simple as the problems may seem to the man in the street, however, to some of the profoundest and clearest thinkers the subject is full of perplexity.

More general interest in education is taken today than ever before, and not only have new teaching methods evolved through man's clearer knowledge of the working of the human mind, but modern requirements have demanded newer knowledge and more practical applications. The time is not so far distant when a knowledge of the classics was essential to any gentleman's education, whatever his work might be in after life. Today, without perhaps eliminating their study or denying their value, other subjects have been introduced into the curriculums of even the most conservative schools. There was a time when there was only one teaching method—parrot-like repetition. Today education authorities have requisitioned the powers of science, and among the instruments none is more suited to the purpose than the cinematograph.

When the spirit of emulation is introduced into a

school there prevails the keenest spur to youthful intellect and endeavour, and through the medium of the screen can be conveyed to the boy or girl inspiration in its most emphatic manner. Above all things can the film re-awaken dead interest, for it may range the continents of the world and the oceans, bringing before the eye scenes that hitherto have been vivid only if the teacher possessed the ability to describe and the pupil the power to visualise. The chance of the teacher not possessing the power and the pupil not having the necessary imagination was very great ; the film overcomes these difficulties.

There is little need in 1939 to dwell upon the advantages of the film as a method of instruction, they are too well known and admitted by teachers and educationalists. It is to be regretted, perhaps, that more advantage of the new medium was not taken at an earlier date, and even today there are many schools in the country unequipped with the machine that can now be classified as an essential piece of a school's equipment. There are enthusiasts who go so far as to state that there will soon be no need for teachers, as the film will be sufficient in itself. This is exaggerated, but there is no doubt that the film will become more and more essential to the cause of education in this and other countries. There is also the possibility that television will revolutionise teaching methods, and may spell the doom of the film, not only from an educational point of view, but as an entertainment medium as well. That is a matter for the future, however, and need not detain us at present.

Though it is not necessary to survey the advantages of the film as a medium of education, however, there are other matters concerning technique that repay study. There must first be a differentiation made between an educational film, so-called, and a teaching film. There are many films shown today in cinemas that are classed as educational, and are as far removed from this ideal as is possible. Since the introduction of sound there have been rather more of these films produced, but it cannot

be said that the standard has improved. It has been emphasised before that film-producing firms are interested only in receipts, and only when the production of an educational film returns large rewards will they consider such undertakings. From the point of view of the schools this is small drawback, for professional producers have little qualification for producing teaching films. From the point of view of the general public, however, it is unfortunate that the cultural power of the film should have been so consistently smothered. Nor does there seem to be the slightest chance of cultural exploitation.

It is a different matter when one considers the school film, however. There are various factors that require attention, and for the purposes of this survey such films are divided into two groups, those dealing with subjects broadly, designed to provide a background for the pupil's studies, and those designed to instruct specifically, dealing with particular subjects or phases of those subjects. The former will be termed background films, the latter teaching films. In fact, both types are intended to teach, but these designations will serve the present purpose.

There are certain obvious ways in which school films differ, or should differ, from those shown in cinemas for the consumption of the general public. The background film differs from the educational film already referred to only because the latter is so badly produced in the usual course of events. In such a film the necessity of close co-operation between the producer and the teacher is not so apparent, for the former knows far better than the latter how to present facts in an interesting manner, and the facts he is dealing with will not be so detailed as in the other type of school film. He is painting on a broad canvas, and the most important function of the background film is to convey the atmosphere of the subject, not the details. Many so-called educational films, exhibited in cinemas, rely upon foolish devices for their interest. A sequence dealing with the Pacific islands, for example, is spoiled by the introduction of a chorus of

native girls, usually scantily dressed, and every effort is made to divert the interest of the audience from the scenic beauty to the feminine.

The professional producer cannot believe that any human being is interested in such things as the scenery of the Pacific islands, or the native customs of Fiji. He must always gild the lily, and it is in this connection that the background film intended for the use of schools should differ from the educational film exhibited in cinemas. There are other considerations. The school film is intended for children of certain ages, and as with the text-books written for their use, so with the films intended for their instruction, age must be taken into consideration. It is, perhaps, not so important in connection with the film as with text-books, but nevertheless it is a factor. It is possible to show the same film to a class of boys aged sixteen and to a class aged ten, and the appreciation may be as great in the latter case as in the former. This does not mean, however, that the film appealed for the same reasons, and in many cases only sections of the film would appeal to the junior class, but so intensely, that their recollections would be coloured by the isolated incidents. For example, a film running for twenty minutes, and having one quarter of the time occupied with thrilling shots of aeroplane acrobatics, would be exceedingly popular with the junior class and with the senior. The latter, however, would also have appreciated the other sequences, of no interest to the juniors.

The point may appear to be laboured, but at present there are all too few films produced for age groups, and even in the case of the background film the advantages of catering for definite ages are great. There is another point that is often not realised by those using the film as an educational medium, the difference in view-point between a child and an adult. This difference is aptly brought out by the story of the clergyman who showed his little son a biblical film of Christ in the manger.

There was a cock in the scene, and the child said, " There would be trouble if the crowing cock bit the baby Jesus." To the adult the bird had been too unimportant to notice, to the small boy it was the central character, immediately claiming his attention. The teacher understands this differing view-point more easily than anybody else, and close collaboration should always exist between the visual image and the teacher's voice. Only in this way can a child's attention be led to the important facts.

It may be stated at once that the primary object of any school film is to instruct, not to entertain. If instruction can be accompanied by entertainment all well and good, better so, but the primary object of a school film must always be different from that of what may be called a cinema film. So also, therefore, should the attitude of the producer differ, and even in the case of the background films the object is to instruct. It is easier to attain the ideal of instruction *plus* entertainment when dealing with the background film, for the scope is infinitely greater, but whereas the cinema educational film is intended to amuse and entertain, the school film must be accurate as well as compelling.

In the case of both the background film and the teaching film the teacher is present at the time of projection, and this affects the technique of production. The film is either supplementary to the lesson, or the lesson supplementary to the film, but in either case the teacher is an important factor, able to add his own comments and explanations at any point in the film, or alternatively after the completion of the film. This should obviously affect the technique of the school film, it not being necessary to rely entirely upon the picture sequence or the picture sequence *plus* sound to recount a story or a series of incidents. In many cases considerable expense, time and labour are entailed in building a film so that it is clearly comprehensible, with all its ramifications and possibilities, to every member of an audience. The school film,

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therefore, can avoid much detail and much explanation, concentrating upon its proper purpose, portraying, in a vivid manner, the material which is beyond the power of the average teacher adequately to describe or of the average pupil to visualise.

It may be said, in fact, that the school film, whether of the background or teaching type, should be only a skeleton, upon which the teacher may hang as many facts and results as he pleases. It should be an attractive skeleton, however.

Every subject in the school curriculum has its background, a background, incidentally, that not only equips the pupil with a better understanding of the importance of the facts that he has hitherto considered dull and un-interesting, but may be the cause of his greater interest in the subjects. Until recently it has seemed the aim of education to strip bare the bones of all romance, leaving only a dusty skeleton to be picked at wearily by genera-tions of schoolboys. Arithmetic has been merely a toil, no hint being given that upon the seemingly meaning-less juggling with figures depends the world's economic life.

There are certain subjects that lend themselves more readily than others to extension by means of the film. Geography and history leap immediately to the mind, particularly the former, for accuracy can more easily be obtained. It is all very well to supplement the work of a class by providing pupils with reading material that attempts to describe the countries of the world in a manner a little more exciting than that of the average text-book, but there is no medium to compare with the film for power of vivid description. The Empire Film Library, housed at the Imperial Institute, South Ken-sington, possesses a large and growing collection of films dealing with all parts of the British Empire, and most of the material is excellent, particularly the new productions that have been added during the last year. These films are available, many of them, in three sizes,

9.5 mm., 16 mm., and 35 mm. Also the library of the British Film Institute, open to members, must be mentioned.

There are also available films dealing with foreign countries, and sources of supply will be found in the list appended to the end of this chapter. The Canadian Pacific Railway Company and many other firms have such films for loan, and in most cases they serve a very useful purpose, the photography being in many cases excellent and the details accurate.

The history film, unfortunately, is scarce, and although there are available such films as "The Three Musketeers," and other professional productions featuring well-known actors, these are not strictly speaking historical. This does not matter very much, however, when it is only the background of a period that is wanted, but inaccuracies usually abound. A gross example of this was the "Private Life of Henry VIII," in which not only were there errors of fact but errors of taste, and a distorted view of the reign of a great king. Much harm can be done by such films, and when one realises the vast difference the production of historical films designed for the use of schools might achieve in the teaching of history, it is a great pity that more has not been attempted.

Other subjects lend themselves easily to filmic presentation in a general way, and among them should be mentioned science. The General Post Office has available many excellent films dealing with telephony and general engineering problems connected with their work, and these are also available from the Empire Film Library. The importance of the background film is certainly no less than that of the teaching film, and might be exploited more than it is at present. Later in this chapter the possibilities will be more carefully considered.

The second type of school film, the teaching film, is completely different from the background film. The latter is concerned with providing a broad background, the former with detail, and the making of films suitable for

certain age groups is more important. This has not always been realised by producers, though teachers, naturally, have always recognised that it is as essential to provide teaching films suitable to the age of the pupils as it is to provide suitable text-books and other instruction. This is the first essential of any teaching film.

The child is not capable of thoroughly assimilating many facts at once, and the teaching film, therefore, should be detailed and yet limited. It is not necessary here to pursue the subject of teaching method, but merely to consider in what ways the teaching film must differ from other types. It has been found by many teachers, for example, that it is usually better to project a teaching film more than once, and though this is a matter of individual method, teaching films should not be too long and thus prohibit re-showing.

There is another point in connection with this type of film that is not always realised by the producer, unless he be a teacher. The technique of film-craft should be used to emphasise points, not to produce a unified, artistic whole. The teaching film is purely practical, and has no æsthetic significance, and the technique at the command of the producer should be used to emphasise individual facts. It cannot be too strongly emphasised that the teaching film is different both in aim and method from any other type of film. It has no entertainment value, is not produced to amuse the public or satisfy the creative impulse of its producer. It is utilitarian, and is a lesson, to be projected in the class-room.

All these points lead to one inevitable conclusion, that there should be the closest possible collaboration between the teacher and the producer. The teacher is not qualified, usually, to produce a film, but on the other hand, a producer is not qualified either to select a subject or decide upon teaching method. That is the teacher's work, and teaching films must fail largely unless technique is subordinated to the wishes of the teacher. It is not easy to imagine exactly how this ideal collaboration will be

effected, the only solution being the official supervision by the Board of Education. It cannot be considered satisfactory to allow the production of school films to lie in the hands of commercial firms, whose staffs must inevitably be unqualified to produce adequate films for a purpose of which they know little. The points already touched upon by no means complete the list of requirements, and the study of the production of teaching films is highly specialised and deserves research. If the film in the school is to be exploited fully, some method of supervision by experts must be devised.

The rise of amateur cinematography has enabled many teachers to become their own producers, though it is to be realised that the tremendous facilities available to the professional producer cannot be used by the amateur. This inevitably limits the field of endeavour, but there is no doubt that there are possibilities open to the teacher-producer. The advantages are obvious, for the teacher knows exactly what he requires, and furthermore can produce films suitable to the highly specialised requirements of his particular school. Skill in producing films does not come either quickly or easily, however, and it is necessary for the amateur to walk warily at first. Ambitious schemes should not be attempted, and the material ready to hand should be utilised.

It is not wise to attempt to produce historical films, for example, whereas such subjects as chemistry, botany and many others may be efficiently supplemented by means of the amateur ciné-camera. It need hardly be added that photographic methods may be taught by means of actual demonstration. The field is wide, and every school equipped with a projector should also procure a ciné-camera.

The problem of sound or silent films deserves some consideration, although most teachers will already have ideas upon the matter based upon their own experience. It was too readily assumed at one time that sound films would eliminate the necessity of silent productions, and

in the early days of sound the golden quality of silence was at a discount. It is to be questioned, however, whether the sound film is any more satisfactory in the school.

There are various disadvantages attaching to the teaching film with sound reproduction. Most important is the fact that it is almost impossible for the teacher to make any comments during the course of the film, and the possibility of the film being a supplement to the lesson is eliminated. In many cases the commentator will usurp the functions of the teacher, with no qualifications for the task.

There is also the question of accent and dialogue to be taken into account. Some commentators have pleasant voices, but many are sadly lacking in this quality, and some harm might be done by gratuitously forcing children to imbibe poor English and a slovenly accent. Furthermore, the timbre of a voice may detract from the value of a lesson, more especially if the speaker is not already known to the children. It is to be remembered, however, that the range of films available in 35 mm. sound stock is wider than in any other size.

There are certain broad conclusions which may be drawn from this brief survey. The background film and the teaching film should differ completely from other types of films, and the technique should be used to emphasise teaching points, not to achieve unity. Close collaboration should exist between teacher and producer, much closer than is possible today, and some central authority should supervise the production of all school films. The background film might be extended considerably, and in this case the collaboration between teacher and producer need not be so close, nor need technique be used to emphasise teaching points. The producer of this type of film could be allowed more scope, and could use all his technique to create the necessary atmosphere.

More background films are needed, for they serve a

most useful purpose, and particularly is it necessary to produce accurate historical films, for no subject lends itself so adequately to filmic treatment, nor, unfortunately, does any subject so lend itself to misrepresentation. The countries of the British Empire are more or less adequately covered, but films dealing with foreign states should be produced in large numbers. Other subjects, not at present covered in any way, should be made the themes of background films, and no effort should be spared to render them accurate in detail, nor should technique be allowed to sink into second place. At present the professional producer is more dominant than the teacher; it would be unwise, in the case of background films, if the position were entirely reversed. Technique is essential.

The production of the teaching film requires the expert assistance of the teacher, and such films should be designed for specific purposes. They should be short, concise, and the peculiar ability of the film to portray in vivid manner the teaching points should be exploited to the full. The film in the school should not be an unusual occurrence but of everyday frequency and importance; it should be an essential tool, fully appreciated and exploited. Before this can be achieved, however, adequate supervision of production is essential.

It will not be out of place at this juncture, perhaps, to consider the legal obligations placed upon exhibitors of cinematograph films. More especially is this necessary when standard 35 mm. film is to be shown, for this is highly inflammable, being constructed upon a nitrocellulose base. Recently, however, some doubt has been cast upon the non-inflammability of the " safety " films, which are usually, though not invariably, sub-standard in size. The position with regard to these latter is not yet clear, and exhibitors would do well to investigate the position before failing to conform to the regulations of the Cinematograph Act of 1909.

This Act is still in force, and imposes certain regulations designed to prevent fire. The Act states, " An exhibition

of pictures . . . by means of a cinematograph or similar apparatus for the purposes of which inflammable films are used, shall not be given unless the regulations made by the Secretary of State for securing safety are complied with, or elsewhere than in premises licensed for the purpose in accordance with the provisions of this Act."

A. LIBRARIES FROM WHICH FILMS MAY BE HIRED

Library	Subjects	Film Size ★	Hire Charges per Day	Sale Prices
British Instructional Films, 111, Wardour St., W 1	Entertainment, Geography, Natural History, Science, History, General Interest	35 sd 16 sd	From 5/-	Not for sale
Brunswick Film Distribution, 41, The Mall, Ealing, W 5	Entertainment, General Interest	16 sd	On Application	
Cine Equipments, 35, Colmore Row, Birmingham	Geography, Industry	16 st	3/-	From £6/0/0 a copy
Cinepro, Ltd., 1, New Burlington St., W 1	Physiology, Engineering, Geography	16 st cycle films	For sale only	£1/5/0
Dance-Kaufmann Films, 18, Upper Stanhope St., Liverpool, 18	Handicrafts, Physics, Mathematics and Engineering	16 st cycle film loops 12-18 ft or 50 ft lengths	From 2/-	Complete Cycles from 10/- Craft Films (one reel) from £7/10/0
Educational Films Bureau, 24, Denmark St., W C	Geography, Physics, Natural History	35 st 35 sd 16 st	Free to Educational Centres	By arrangement
Educational and General Services, 37, Golden Sq., W.1	Entertainment, Geography, Travel, Industry, Natural History, Sport, General Science, Religion, General Interest	16 st 16 sd	From 2/6 ,, 5/-	From £2/10/0 per 100 ft.
Ensign, Ltd., 88, High Holborn, W C 1	Entertainment, Travel, History, Natural History, Sport	16 st 8	From 1/3	From 21/- per reel of approx. 100 ft. From 12/- per reel of 50 ft.
G B. Equipments, Ltd., Film House, Wardour St., W.1	Entertainment, Biology, Physics, Geography, Natural History, General Science, Industry, Sport, General Interest, Physical Education, History	35 sd 16 sd 16 st	From 10/- From 5/- From 3/6	£8/8/0 £7/0/0

★ KEY TO SIZES

35 st. =35 mm silent, 35 sd =35 mm sound
17.5 =17.5 mm. sound; 16 st =16 mm silent.
16 sd. =16 mm. sound; 9.5 =9 5 mm.; 8 =8 mm

A. LIBRARIES FROM WHICH FILMS MAY BE HIRED (CONTD.)

Library	Subjects	Film Size	Hire Charges per Day	Sale Prices
Kodak, Ltd , Kodak House, Kingsway, W C 2	Entertainment, Travel, Industry, Natural History, Science, Sport	16 st 8	From 2/6	£9/10/0
Pathé Pictures, Ltd (see British Instructional Films)	Entertainment, Geography, Natural History, General Science, Industry, History, General Interest	35 sd 16 sd	From 5/-	Not for sale
Pathescope, Ltd , 10, Gt Marlborough St , W 1	Entertainment, Geography, Natural History, Industry, General Interest	9 5	£2/2/0 for 12 300 ft films	From 3/6
	Entertainment, General Interest	17 5	From 3/6	
Brian G D Salt, 5, Carlingford Road, Hampstead, N W 3	Mathematics	16 st	Nominal charge	30/-
Soho, Ltd , Soho Square, W.1	Entertainment, Travel, General Interest	16 st	Not for hire	£1/5/0 per 100 ft.
Typewriting Films Producers, 108, Renfield St , Glasgow, C.2	Typewriting	16 st cycle films	On application	£6/10/0 for set of 30
Visual Education, Ltd , 31, St. Martin's Lane, W C 1	Geography, Natural History, Sports, Engineering, General Interest	35 st 35 sd 16 st 16 sd	From 5/-	From £6/6/0
Wallace Heaton, 119, New Bond Street, W 1	Entertainment, General Interest, Science, Natural History, Travel	16 st 16 sd	3/- 7/-	Not for sale
Western Electric Co , Ltd., now Sound-Services, Ltd.	See Section D, Road Show Services			
G. Roland Whiteside, Jetta's Studios, 11, New Market Street, Blackburn, Lancs.	Art, Travel	16 st	From 5/-	From £6

NOTE :—A number of non-fictional 35 mm sound-films suitable for general educational purposes may be hired from film distributors whose main business is concerned with theatrical entertainment films. Further information regarding such films is obtainable from the British Film Institute.

B. LIBRARIES FROM WHICH FILMS MAY BE BORROWED

Library	Subjects	Film Size
National Film Library, British Film Institute, 4, Great Russell St , W C 1	Educational and General Interest films are loaned at nominal fees to members of the British Film Institute Apply for lists and particulars	35 st , 35 sd , 16 st , 16 sd
Empire Film Library (late Empire Marketing Board), Imperial Institute, South Kensington, S W 7	Geography and Industry Communications (including G P.O Films) Lent to educational groups	35 st , 35 sd , 16 st , 9 5
Ministry of Agriculture and Fisheries, 10, Whitehall Place, S W 1	Agriculture	35 st , 35 sd , 16 sd.
Australian Trade Publicity, Australia House, W C 2	Geography and Industry	35 st , 35 sd , 16 sd
High Commissioner's Office, Canada House, Trafalgar Square, S W 1	See Empire Film Library	
Dominion of New Zealand, High Commissioner's Office, Trafalgar Square, W C 2	Geography and Industry	35 st., 16 st
Union of South Africa, High Commissioner's Office, Trafalgar Square, W C 2	Geography and Industry	35 st , 35 sd.
Canadian Pacific Railway Co (Publicity Agent), 62/65, Charing Cross, S W.1	Geography and Industry	35 st , 35 sd , 16 st , 16 sd.
British Commercial Gas Association, 28, Grosvenor Gardens, London, S W.1	Industrial and Social Welfare	35 sd , 16 sd.
Canadian Government Department of Trade and Commerce, Blackburn Road, London, N.W.6	Geography and Industry	35 st , 16 st.

(Reprinted by courtesy of the British Film Institute from Leaflet No. 5, *Choosing a School Projector.*)

THE FILM AND THE LIBRARY

If the resources of the library, the school and the cinema were combined they would constitute a force to be reckoned with for the furtherance of education. The school has already made much use of the film as a medium for instruction, and there is no doubt that in the years to come more and more use of the film will be made by Education Authorities throughout the country. Many libraries have turned to the new medium, though it has not been so thoroughly exploited as perhaps we could wish.

There are broadly two methods open to the Library Authority wishing to exploit the film, and either or both may be attempted, and in some cases are already undertaken. Films may be borrowed for the purposes of exhibition within the library, either to children or adults, and films may be collected in exactly the same way as at present books are collected. This latter activity may seem completely outside the function of a Public Library, and it is not the purpose of this work to examine the arguments for and against such collections. Nor is it here necessary to consider the advantages of exhibiting background films to children or adults. Many libraries are undertaking the latter work, but none, to our knowledge, the former.

It is necessary, however, to consider the reasons why public collections of films should be made, not necessarily by the Public Library, though in our opinion the latter is the most competent institution to undertake such a task.

It has long been advocated that such collections be made, at the minimum one such national pool, where films may be housed and preserved for posterity. It has long been deplored that brilliant films are no longer available, and research into cinematography is made doubly difficult by this fact. From an æsthetic point of view also it is commendable to form a central pool. In 1935 the British Film Institute came into being, and does much to fulfil the long-felt want. The Institute issues a catalogue of 35 mm. and 16 mm. films available to individuals and institutions who are members of the Institute, and also publishes a bibliography of books dealing with the film.

This is admirable work, admirably undertaken, but it is not enough. The British Film Institute is not a national institution, though aided by grants from the Cinematograph Fund administered by the Privy Council, and its influence and the scope of its appeal is therefore not as wide as if it were a national repository. This is not intended to suggest shortcomings on the part of the British Film Institute, more about which body will be found in Chapter XI, but rather points to the fact that the nation should possess a national repository of films.

The work of the British Film Institute is not widely enough known, and local authorities, who could have access to their invaluable collection of films, do not subscribe in large enough numbers. This may be due to ignorance of the existence of the Institute, but this is a disadvantage inevitable to a private concern. No teacher and few laymen today deny the advantage of the film as an educational medium, not only in the schools, but in other institutions, and it is to be lamented that the production, preservation and circulation of educational films has not been organised more efficiently.

The provision of a national repository and film library, the nucleus of which the British Film Institute would be in such an admirable position to supply, having available many outstanding films that the authorities would no doubt be permitted to reprint, should be followed by the

organisation of local centres for the dissemination of the available films. Public Libraries would be admirably suited to serve as such centres, and such a system would bring the film and its amazing scope into the lives of millions of private citizens, as well as providing the educational authorities of each area with facilities for borrowing, easily and quickly, suitable films for their schools. The Public Library would also be in a position to provide books dealing in more detail with the subjects of the films.

Such an organisation, working through the central repository, cannot be considered an unattainable ideal, and the difficulties of attaining it are not comparable with the obstacles that the pioneers of the film were called upon to surmount. Unfortunately it seems to be the rule that if man believes there is money to be made no obstacle is too difficult for him to overcome. It is only when the cultural aspect of such work remains to be exploited that the difficulties assume gigantic proportions. There is no money in culture!

By bringing the cinema within the scope of the Public Library, the authorities would be adding materially to the value of the institution. The commercial cinema will not provide educational films, or only rarely, because they have no box-office appeal, and the only method by which such films may adequately be circulated is through the medium of such a public institution as the Public Library.

The aim of all libraries is to preserve knowledge for the use of succeeding generations, while serving their own generation to the best of their ability. It is difficult to imagine arguments being advanced against the preserving of films in Public Libraries on the ground that such work is not within the scope of their functions. There are practical problems, certainly, at this date seemingly insurmountable, but if the vital significance of the film as a medium of education and culture were thoroughly understood, means of overcoming these difficulties would be found. The case for a national

collection of films and the organisation of local centres of distribution, whether those centres be in Public Libraries or elsewhere, seems unanswerable.

It has been said that the Public Library should reflect every phase of mental activity, not only catering for the man in search of culture, but for the reader of recreational literature. Many will not agree with this definition of the duties of a Public Library, but in practice most authorities follow this rule. By no other means than the cinematograph can knowledge and entertainment be so vividly conveyed. Every picture tells a story, runs the adage, and custom has, perhaps, blunted our perceptions, so that we do not understand the true importance of the film. Books, or any other media, are not important in themselves, but only in what they convey. If a new medium is discovered, as the film, that conveys certain impressions and certain pieces of knowledge in a more efficient manner, then that medium should displace others. In some ways and for some purposes the film is more efficient than the book.

In 1914 Germany established a film library in Berlin, which has now assumed tremendous proportions. The collection is extremely valuable and covers an extensive range of subjects, being quite unequalled anywhere. In connection with this library an intelligence bureau has been inaugurated, from which advice can be obtained on all matters appertaining to the cinematograph and its uses. The resources of the library and the bureau seem to be inexhaustible, and the films may be borrowed for the purposes of instruction by Education Authorities and other allied bodies. Soviet Russia has also organised a similar project for the preservation of national films.

It will be seen, therefore, that other countries were not slow to realise the significance of the film and the necessity of preserving copies of outstanding productions. It is not too late for England to commence a like service; indeed, the British Film Institute has already made excellent progress. It is unsatisfactory, however, to allow

private individuals to undertake the work which is the responsibility of the State.

The cinema has affected the Public Library, though not in the way many imagined. At one time it was thought that the film would spell the ruin of the Public Library, just as it was believed that the gramophone, the radio and the light car would prove temptations too strong for the average borrower. These fears have been proved ground-less, and in the case of the cinema the opposite effect has been noticed. Many people do not read at all, as all librarians know, and it has been remarked that the show-ing of the film version of a famous book at the local cinema invariably causes a demand for the book itself at the Public Library. Many of these requests emanate from non-readers, who probably did not know that there was such a book in existence, and such a film undoubtedly results in the enrolment of many who would otherwise have remained non-borrowers.

The gist only of a story can be filmed, and though the characterisation may be excellent, it is not possible to portray on the screen the charm of the style of the author. Much has been said in this work concerning the value of the film, but there are limitations. Fine writing remains one of the most precious of gifts, and it can never be transposed. For some purposes, for certain types of instruction, the film is a better medium than the book, but the film of a famous novel can never be that novel. " Stella Maris " was typical of screen productions. The dual role was played with distinction by Mary Pickford, and the film was effective and enjoyable. In spite of any praise one can give it, however, it did not contain, and never could contain, the author's pleasant style of writing.

The film versions of the novels of Dickens, " Oliver Twist," " Christmas Carol," and " David Copperfield " had the effect of creating a demand for his books. Public Libraries were inundated with requests, and even the twopenny circulating libraries experienced a demand.

What they did about it is not on record! The filming of " A Tale of Two Cities " caused a sharp demand for works dealing with the French Revolution, while the exhibition of the " Count of Monte Cristo " and " Les Misérables " cleared the shelves of all the novels of Dumas.

Here is sufficient proof, if proof were needed, of the effect the film may have, and if such results can be obtained by chance, for no producer has the intention of assuming the role of cultural godfather, it makes one wonder what could be achieved with even the minimum of direct effort.

It has been said by competent authorities that the film is not only making those read who never read before, but is encouraging those who have already acquired the facility to read more. Apart from this the film has given an entirely new orientation to literature, for practically all modern authors now write with one eye on possible film adaptation of their books. This interesting process has been carried several steps further by the fact that film producers arrange for novels to be written around their new photo-plays. This amply demonstrates the fact that even the modern producer realises that there is a limit to what may be filmed, and that the printed word can never be faithfully reproduced.

Whether this new orientation is to be welcomed or not, the fact that the film is a live feature of modern life has been amply demonstrated. Its popularity can be used to link up the cinema and the library, to direct the public from the pictures to the word-pictures.

The two methods of exploiting the film suggested at the commencement of this chapter may now be surveyed. The exhibiting of films within the library, especially to children, is a valuable activity, and one that might be undertaken more widely than at present. It has been found to serve two useful purposes, it encourages the enrolment of non-readers and stimulates the circulation of non-fiction works. As was pointed out in the chapter

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dealing with the film in the school, many societies and commercial firms have films for loan or hire, and the scope is almost unlimited.

The teaching film would not be required, but the exhibition of background films would continue the service inevitably dropped when the boy or girl leaves school. It may well be argued that such work is more valuable during adolescent years than during childhood, and as so many thousands of youngsters leave school at fourteen or fifteen, the Public Library could extend its scope usefully in this direction.

Such work for adults is not to be despised, for it will serve the same purposes as with children, though perhaps to a modified degree. Access may be had to films that are never exhibited at cinemas, films that have great cultural value or are brilliant examples of technique. Films that have pictorial beauty, that appeal to that longing for beauty that is fundamental in every human being. It is not necessary to enlarge on the subject, and it is sufficient to state that if facilities are available, the use of films could enlarge the scope and increase the value of any Public Library.

Some consideration has already been given to the problem of providing a national collection of films and the organisation of local centres for distribution. There is another method by which the Public Library may exploit the film, however, the second method outlined at the commencement of this chapter. Films may be purchased and stored at the library for the use of residents. We know of no Public Library that at present undertakes this work, but it is interesting to consider the possibilities. If the library were already serving as a centre for the distribution of films from the national collection, the local collection would naturally be selected with this fact in mind. Local interests should form one part of such a collection, which would be built up from the work of amateurs. The value to posterity would be immense, and this one branch of the work might easily be undertaken

by any Public Library, provided that there were, in the district, keen amateur cinematographers. Other sections of the collection would include film versions of famous books, and, in fact, films dealing with every branch of human undertaking.

Storage and preservation of films is a matter that must interest not only the librarian who may decide upon such a departure from precedent, but many others who require to preserve films for indefinite periods. Films that are to be stored for long periods should be produced upon safety stock, which does not contain more than a small proportion of cellulose nitrate or its equivalent. If other films are taken into store there is always the risk of fire to be considered and this must be minimised as far as possible. Care must be taken to ensure that the temperature of the store is kept as low as possible above freezing point, and it should be between 33° F. and 40° F. When a film is withdrawn from store it should not immediately be subjected to much higher temperatures, and the process of increasing the temperature should last several hours.

On no account should tin boxes be used for storing films, for rust is ruinous, and when a film once becomes scratched by the fine particles of rust or dust, its useful career is over. Such films, when projected, show rain marks. Bakelite is a reliable synthetic material for film containers and has been thoroughly tested. Sudden temperature changes should always be avoided.

Film should always be wound with the gelatine outwards, in reels of approximately 1,000 feet, on cores of not less than 2 inches, made of non-corrodible material. It cannot safely be predicted how long any film will last, but if properly stored it should last in good condition at least fifty years. At present there is no process whereby the life of a film may be prolonged indefinitely, and if ever a national collection of films is organised, it will be necessary to produce reprints at intervals, before deterioration has set in.

In collecting films, either by a public institution or by a private individual, much valuable advice and assistance may be procured from the British Film Institute. Reprints can be obtained of any of the films in the possession of that body, and this is a valuable service not widely understood.

Some method of classification is necessary in any film library of any size, and below is suggested a workable scheme that is not too complicated and will enhance the value of any collection of cultural films. So rapid is the progress maintained by the film of today, and so much is realisation of the value of the film as an educational medium growing, that large collections are no longer mere possibilities. Schools, clubs, institutions and private individuals are building up libraries, and some organisation is essential. An admirable work waiting to be undertaken is the co-ordination of private collections, their organisation so that films may be available to other collectors. It should not be impossible to organise an inter-loan system, whereby members lend and borrow films, just as today Public Libraries subscribe to Regional Bureaux for the purposes of lending and borrowing books.

FILM CLASSIFICATION (MAIN HEADINGS)

A	Arts	I	Industry
B	Biography	J	Juvenile
C	Communication, Commerce	L	Literature, Languages
D	Documentary	M	Miscellaneous
E	Educational	R	Religion
H	History	S	Sociology

PROJECTION EQUIPMENT

The choice of a projector for school, library or institutional work depends entirely upon whether standard or " safety " film is to be used. There are a few standard 35 mm. films available printed upon " safety " stock, but these are too few as yet to make it worth while purchasing a standard projector unless the regulations imposed by the Cinematograph Act can be followed and standard films on celluloid be shown. There is little doubt that eventually " safety " films will either be exempt from the regulations altogether, or less stringent rules will be drafted for their use. It is important to understand, however, that at the present time care should be taken by all exhibiting films in a public or semi-public manner, that they are not infringing the regulations, or the interpretation of the regulations laid down by the licensing authority.

There are several matters demanding attention when selecting projection equipment, and the various sizes of films available have their advantages and disadvantages. " Safety " stock is, with the few exceptions already noted, of less width than standard stock, and the dimensions to be quoted refer to the width of the film. These differences, therefore, materially affect the projectors designed to exhibit these films, and unless a dual-size projector is purchased, it is possible to project only one of the sizes by means of one projector. This fact makes the proper choice more difficult and important.

The width of the film affects materially the brilliancy of the projected image upon the screen, for the less wide is

the photographic reproduction on the film the more dense is it, and consequently the more powerful is the light required to project a bright picture. That is, if a picture of any size is required. A 9.5 mm. film may be projected more brilliantly than a 16 mm. film if the illumination in the former case is considerably greater than in the latter, but as in most cases the most powerful illuminant practicable will be used the rule regarding density and brilliance holds.

There are other factors affecting choice of size, however, the most important being the variety of suitable subjects available. We will first consider the standard 35 mm. film, which should not be discarded merely on account of its inflammability. It is not difficult to construct a small cinema which conforms to the regulations, a fire-proof projection room being provided. In the case of a school or other institution it should be well within the power of the staff and students, and has been accomplished in many cases.

There are many advantages attaching to the standard film, for it is wider and therefore less dense than the sub-standard film, and potential illumination is therefore greater. The 16 mm. film, exhibited under the same conditions, and on an expensive machine, does not compare with the 35 mm. standard film. This is a factor to be taken into consideration, although the use to which the projector is to be put must be a deciding factor in choice, and for normal purposes, unless the audience is going to number several hundreds, the results from the 16 mm. film are quite satisfactory. In America 16 mm. films are being shown in many public cinemas, though it is to be remembered that the projectors will be specially adapted to carry intense illumination. In general it may be stated that with ordinary illumination it is possible to project a brighter picture with a standard film than with any sub-standard size.

There are three other factors to be taken into consideration, cost of equipment, choice of films and the possibility

of producing one's own films. This latter is important, for as has already been pointed out, the possibilities of the teacher being able to build up his own teaching films are great. It will not be possible to produce such films if standard equipment is purchased, for the cost is prohibitive, and the alternative of using two projectors, one standard and the other sub-standard, will also be too costly in the usual way.

Initial cost of equipment in the case of the standard projector will be heavy, much heavier than if a sub-standard projector be purchased, though it is likely that a more prolonged life will result. Also second-hand silent 35 mm. projectors can be purchased cheaply.

The question of film selection is more difficult, for it must not be forgotten that the choice of background films will be infinitely greater in standard size, for one has the whole range of professional production available. There have been, despite rather drastic criticism in this work, many excellent travel films produced by professionals, and many more that would serve a useful purpose in the school, library or other institution. There have also been costume dramas which would be of use to close the gap already noted in this type of film, and even if the whole of a photo-play was not considered suitable, at least parts could be used to provide a background to historical studies. These facts need to be borne in mind when selecting the type of apparatus, and naturally it is always necessary to consider closely the uses to which the films are to be put. The requirements of a school will probably be entirely different from those of a library.

With regard to silent teaching films there is better selection to be obtained in the sub-standard sizes, especially in 16 mm. Most of those educational films produced on standard film are reproduced on 16 mm. gauge, and there are many produced in this latter size originally. There are also many hundreds of excellent travel and other background films produced in this size, as will be seen later, and having regard to all the factors, not the

least important of which is the inflammability of 35 mm. film, it would seem that the standard size is not eminently suited to school or institutional requirements. Special circumstances, however, may alter this view. The range of sound 35 mm. films is greater than in other sizes, however.

It is not intended to quote exact prices for standard projectors, and it is always advisable to obtain the advice of reputable dealers. It must be remembered that sound projectors are more costly than silent machines, and the films are more expensive either to purchase or hire. There are three types—Standard, Semi-portable and Portable.

The standard machine is the type used in cinemas and is intended for permanent installation. It is adapted for a long throw of between sixty and two hundred feet, and the illumination is either by means of carbon-arcs or incandescent lamps. The fact that the machine is intended for a long throw is important, for the lens will project a very small picture if the distance between the projector and the screen is small. For institutional use the incandescent type of illumination is the better, for arcs need constant attention, whereas the former illuminant is adjusted at the time the machine is installed and needs no further attention until the lamps burn out. The replacement of the lamps is quite simple. Proficiency in operation is easily attained.

The semi-portable projector is similar to the standard type, except that it is small and more mobile. It usually weighs approximately seventy-five pounds, and is suitable for small halls. It is not recommended for use in classrooms, however. The majority of semi-portable projectors are equipped with stereopticon attachments which make them of value in schools.

The portable standard projector is as mobile as the sub-standard projector, and usually weighs about twenty pounds, being in appearance not unlike a suitcase. It is suitable for classrooms and small halls, and renders a

bright picture from up to seventy feet. It is motor-driven and usually derives its power from any main circuit.

Sub-standard projectors offer a wide choice, and there are several factors to be taken into consideration. As has been stated, with few exceptions, " safety " films are printed upon sub-standard stock, and there are at present four sizes easily available, 9.5 mm., 16 mm., 8 mm., and 17.5 mm. The question of density has already been considered, but there are other matters affecting choice, the most important being the variety of subjects available in each size. First we will consider silent films, and the last size quoted above, 17.5 mm., is limited to sound films and will be considered with other sound films.

With regard to silent films there is an infinitely greater variety of suitable subjects in the 16 mm. size than in either of the others. Both 9.5 mm. and 8 mm. are ideal for the amateur using his own camera and not having a great deal of money to spare, but from the point of view of the educationalist there is nothing to compare with the 16 mm. size, which ensures greater brilliancy of the projected image and a greater variety of educational subjects.

16 mm. projectors may be purchased, new, from £10, ranging to £200 or more, a great deal depending upon the type and power of the illuminant. Machines at the former price are not recommended for school or library use where a large picture is required, but it is possible to purchase an efficient machine for such purposes at approximately £25. There are a number of firms producing 16 mm. projectors, among which may be mentioned Kodak, Filmo, Eumig and Bolex. These are but a few, but it is essential to purchase a machine from a firm enjoying a good reputation, and care should be taken to ensure adequate illumination for the purpose in mind. Expert advice can always be procured from the firms themselves or from large photographic dealers.

9.5 mm. and 8 mm. projectors can be purchased from £10-£40, though the limitations already discussed make

such machines unsuitable for school, library or other educational purposes. There is, however, the dual size to be considered, and there are several machines upon the market which, with minor adjustments, take either of two film sizes. These can be purchased to project either 9.5 mm. and 16 mm., 9.5 mm. and 8 mm., or 16 mm. and 8 mm. Great strides have been made in the 8 mm. size, and it is more than possible that in the near future the variety of educational subjects available in this size will compete with the larger gauge. If the purchase of a dual-size projector is contemplated choice of the sizes must depend largely upon personal inclination or opportunities. Dual machines may be purchased for £30, and two may be mentioned here, the Bolex and the Pathé 200B, now adapted for 9.5 mm. and 16 mm.

Sound films are a different proposition, and the whole matter has to be considered most carefully. The main point at issue is whether sound is suitable for educational work, and many educationalists do not advocate it. It is a matter of personal inclination and experience.

All three of the larger sizes of sub-standard films can now be procured as sound films, the latest invader of the field being the 9.5 mm. A projector for this latter size can be purchased for £60, and is a Pathé machine. At the time of going to press this is the only machine produced for 9.5 mm. talkies. The reproduction and projection brilliancy is exceedingly satisfactory, though the variety of films is, inevitably because of their recent introduction, rather limited. This is likely to be remedied in the near future, however.

The 16 mm. sound film has as much to recommend it as the same size silent film. Reproduction is excellent, the image brilliant, and the variety of subjects large. With most sound projectors, silent films of the same size can be used as well as sound films, and this makes for even greater variety. Prices range from approximately £90, and it is recommended that prospective purchasers obtain expert advice from reputable photographic dealers.

17.5 mm. sound films and equipment are manufactured by the Pathescope Ltd. Reproduction and projection are good, and a machine may be purchased for £60.

The essentials of a satisfactory projector, from the educationalist's point of view, may be summarised as follows: size and brilliancy of the projected picture must be adequate for the purpose; the machine itself must be capable of hard wear; in sound projectors the reproduction must be undistorted; and lastly, but perhaps more important than any other consideration, the variety of suitable subjects, from whatever source, must be wide. The obtaining of expert advice is so important that it must be emphasised yet again. There will always be present certain definite requirements, certain physical factors that must be taken into account when providing projection facilities. Even more important are these factors when sound equipment is desired, and only an expert can ensure maximum satisfaction.

It should be noted, lastly, that reliable second-hand equipment can be purchased at prices ranging from one-half to two-thirds of the prices for new equipment, and it is often more economical to purchase good equipment second-hand than new equipment of inferior quality.

With regard to standard projectors, designed to take standard 35 mm. film, there are several on the market, and prices of sound equipment range from approximately £200. Once again it must be emphasised that the range of films is very wide.

It may be helpful to say something concerning the care of the projector and films. It is of vital importance that the machine should receive every care and attention, for it is a complicated and precise piece of mechanism, and the slightest fault will probably ruin the film and damage the projector. The film is waxed when new, to facilitate smooth running through the gate, and some of this wax adheres to the gate and other parts of the mechanism as the film passes through. This can always be removed by means of a stiff brush and a little benzine. Do not in any

circumstances use a sharp knife or other instrument, as it will scratch the metal and prevent the even running of the film. The metal forming the gate and film guides is smooth and highly polished and can be damaged very easily.

Lenses and condensers should be kept perfectly clean, as dust will materially affect the brilliancy of the projected picture. No inexperienced person should be allowed access to the projector unless under supervision, and in the case of 35 mm. films this is even more important, owing to their high degree of inflammability.

The type of screen used is important, but choice must be made according to circumstances. There are many types upon the market today, and it is foolish to pay a great deal of money for a projector and then use an inadequate screen. Money expended upon a good screen is well repaid. The silver screen is probably the most popular today, and the reflecting surface renders a more brilliant picture than absorbent, white material. It has a disadvantage, however, for the farther away from the centre of the screen a person sits, the less bright appears the picture, and the silver screen is definitely directional. Provided a hall or room is narrow, however, the silver screen is admirable.

The beaded screen consists of a screen coated with thousands of minute glass beads. The brilliancy of the picture projected upon such a screen is amazing, but once again this type of screen is directional, and the narrower the angle of vision the more brilliant is the picture. It is admirable for a narrow hall, or in circumstances when the audience can be ranged down the line drawn from the centre of the screen to the projector. It is to be remembered, however, when choice is being made, that if such an arrangement can be undertaken, the beaded screen affords the maximum brilliance.

The white screen does not afford such brilliance, but it is not directional, and therefore ideal for halls and rooms where it is not possible to range the audience near the

screen-projector line. White distemper is a satisfactory material to use, and it has often been noted that white blotting-paper makes a satisfactory make-shift screen. It is important to realise, however, that the flat, white screen does not give such a brilliant picture, and can be used satisfactorily only if the power of the illuminant is very high.

The threading of the film through the projector is important, for if this operation is undertaken unskilfully the whole film may be hopelessly ruined. The strain upon the celluloid is considerable as it passes through the projector at a fast rate, and it is essential to ensure that the sprockets or claws that engage in the perforations of the film are engaged properly to commence with. Sprockets must be kept perfectly clean, and worn teeth should be replaced.

Library films should be inspected and rewound by the renter before dispatching to other hirers, but this is not always done, so that careful inspection before projection is recommended. For this purpose a rewinding apparatus is necessary, some film cement, and a splicer for repairing breaks. This latter can be purchased cheaply and is indispensable. The full reel should be placed on the rewind, one end being attached to the empty reel. Hold the film between the thumb and forefinger, pressing the middle or third finger beneath the film, thus cupping it. Any defective or broken sprocket hole can then be seen easily. Wind slowly on to the empty reel, with the dull side of the film on the outside. If the film is rewound loosely, do not pull it in order to tighten as this will scratch the surface and cause streaks.

To repair a break the splicer should be used, and full instructions are usually included with the apparatus. It usually consists of two clips to keep the two ends of the film firm, and a third clip to press the ends together when the film cement has been applied. The two broken ends should be carefully scraped, for a distance of about $\frac{1}{16}$ inch from the break, the one on the emulsion side, the other on

the shiny side. Film cement should then be carefully brushed on the prepared surfaces and the clamp lowered. About half a minute will be enough to ensure a strong join.

All films should be kept in containers until actually wanted, and if by any chance the film ignites in the machine, only possible in the case of 35 mm. film, do not lose your head. Do not open the spool-boxes, but allow the film to burn itself out; it will not explode as many people imagine.

These constitute only a few hints, but they are worth remembering. Many other invaluable points can be gleaned from the many books published for the amateur, and nearly all of which contain a section dealing with projection. The pamphlets issued by the British Film Institute are particularly recommended.

THE BRITISH FILM INSTITUTE

The British Film Institute was founded in October, 1933, as a company limited by guarantee and not having a share capital under the Companies Act of 1929. It was founded in order to make the film the servant of progress and to exercise a constructive, critical influence over the whole field of cinematography.

The objects of the Institute are to promote the use and development of the cinema as a means of entertainment and instruction. The pioneer work of the Institute in this latter respect, the use of the film as a visual aid to education, has passed from the province of experiment to the realm of reality.

In part the Institute is financed by a grant from the Cinematograph Fund administered by the Privy Council, and in part by members' subscriptions. Its information bureau and its impartial advice and assistance are at the service of any organisation or individual.

In short the Institute provides a meeting place where the film trade, the educational world, and those enlightened members of the general public who see the need for constructive action and co-operation with the trade, can share their problems and learn to appreciate the views of the other side.

The main section of the Library, which contains some seven hundred films, is devoted to preservation and none of them are ever projected under any circumstances. The majority of these films are presented by various companies on condition that they are preserved for the future. They

are stored in vaults under certain conditions of temperature and are inspected at frequent intervals for any signs of deterioration.

Records are kept of practically every film used for educational purposes. These films are catalogued according to subject. The Institute has collected from the scrap heap and the lumber room copies of old masterpieces. The collection now amounts to over a million feet of film, providing a practical record of the development of the film from the days of Queen Victoria to the present time.

The Library has a loan section available to full Members of the Institute. In this section are reprints of some of the more interesting of the early films as well as films of educational interest, including a series of geographical films specially made out of explorers' material by the Institute Special Advisory Committee.

The main aims and objects of the Institute are—

(1) To act as a clearing house for information on all matters affecting films at home and abroad, particularly as regards educational and general culture.
(2) To influence public opinion to appreciate the value of films as entertainment and instruction.
(3) To advise educational institutions and other organisations and persons on films and apparatus.
(4) To link up the film trade and the cultural and educational interests of the country.
(5) To encourage research into the various uses of the film.
(6) To establish a national repository of films of permanent value.
(7) To provide a descriptive and critical catalogue of films of educational and cultural value.
(8) To advise Government Departments concerned with films.
(9) To certify films as educational, cultural or scientific.
(10) To undertake similar duties in relation to the Empire.

In 1934, the British Kinematograph Society set up a Special Committee to consider means that should be adopted to preserve cinemtaograph films for an indefinite period. The sittings were long and numerous, every *pro* and *con* being analysed and sifted, and the best technical knowledge in the British film industry was pooled to arrive at a workable solution.

The Report was published in the firm belief that it would prove helpful, not only to the British Film Institute, in carrying out the task of setting up and maintaining a film repository worthy of the traditions of the British Empire for thoroughness.

The Committee was composed of the following members:

Mr. S. Rowson, President of the British Kinematograph Society (Chairman).
Dr. G. R. Davies (appointed by the Department of Scientific and Industrial Research).
Mr. J. A. Hall (appointed by the National Physical Laboratory).
Mr. Cecil M. Hepworth.
Mr. F. R. Renwick (Selo).
Captain J. W. Smith.
Mr. W. R. Webb (Kodak).
Mr. I. D. Wratten (Kodak).

The findings of the Committee embody the following points, which we reprint by kind permission of the British Kinematograph Society:

(*a*) It is well known that, with few exceptions, the photographic processes known at the present day do not yield absolutely permanent results, whereas it is desirable for historical purposes and for the general benefit of posterity that certain cinematograph films shall be rendered as permanent as possible and preserved for the longest possible period.

(*b*) The problem of preservation is theoretically a different one from the problem of reproduction for use

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with cinematograph projectors. It would probably be possible to devise a process for preserving the pictures not necessarily in the form in which they appear in the modern film, but we cannot ignore the fact that such a process might involve complicated technical operations, new types of machines, and considerable expense before the pictures could be restored to the form in which they would be required for projection purposes. This might be the case, for example, if it were thought well to preserve film by means of prints on a metal support, or by considerable reduction of dimensions. The opinion was expressed that any of these theoretical possibilities were to be avoided in favour of a system which will preserve the pictures at their present dimensions on a transparent film support.

(c) The question of preservation of such films as are known to commerce today naturally divides itself under two main headings, the photographic image, consisting of finely divided metallic silver in a thin film of gelatine, and the transparent flexible support upon which the gelatine is coated. The latter is of two kinds, known commercially as celluloid (cellulose nitrate) and safety film (cellulose acetate).

(d) The photographic image as above described is regarded as practically permanent in itself, provided that certain definite precautions are taken in its preparation and that it is suitably safeguarded during its preservation.

(e) It is the cellulose base upon which the gelatine is coated which is regarded as being much more liable to deterioration than the photographic image; and celluloid because of the chemical reactions which take place between the vapours it gives off and the film itself is more liable to deterioration than safety film.

(f) It is as well to point out at this juncture that the title " safety " film relates only to the relatively non-inflammable nature of cellulose acetate, although it is

also a fact that this material is chemically more stable
than celluloid and is, therefore, less liable to spon-
taneous disintegration.

(g) The keeping qualities of a photographic image as
above defined and set out are largely dependent on the
care exercised in the processing during the prepara-
tion of the film. Complete fixation in two separate
fixing baths and thorough washing in several changes
of clean water followed by a final rinse in distilled
water are essential. As it is not the practice of the
cinematograph industry to use two fixing baths and
as there is, moreover, always the possibility that the
film has not been as thoroughly washed as is desirable,
the first stage in the preservation of a film should be
the repetition of these two processes under conditions
which ensure that they will be thoroughly carried out.

(h) Turning now to the base upon which the photo-
graphic image is carried. As previously stated, there
are two alternatives here, celluloid and safety film.
From the point of view of this inquiry celluloid has
the advantage in that it is in common use for com-
mercial films at the present time, whereas the use of
safety film is almost entirely confined to the smaller
or sub-standard films which are at present principally
used by amateurs and for non-theatrical purposes.
Celluloid also has the advantage of having been in
use for a very much longer period and the history of
its behaviour with the passing of time is consequently
better known. There are, for instance, celluloid nega-
tives in existence today and in reasonably good condi-
tion which are between thirty to thirty-five years old,
whereas the oldest safety film has only about one-
third of that age to its credit. On the other hand,
chemists are agreed that safety film is in itself a more
stable material in the sense that it is less liable to
spontaneous disintegration. It is also believed to be
less likely to have a harmful effect upon the photo-
graphic image by the generation of deleterious gases,

and, because it is inflammable only to a slight degree, it needs no special precautions against fire.

(*i*) On the other hand, celluloid, as is well known, is very highly inflammable. Indeed, it has one of the characteristics of an explosive in that its combustion is exothermic and produces oxidising agents. A celluloid fire, therefore, cannot be smothered. Celluloid must, therefore, be regarded as a danger to everything in the neighbourhood as well as to itself, and the fire precautions which are insisted upon by all authorities concerned when celluloid is stored are onerous and expensive.

(*j*) Taking all these things into consideration, it is very strongly urged that films intended for preservation for a long period should be produced upon safety film which, for this purpose, should not contain in admixture with it more than a trifling proportion of cellulose nitrate or its equivalent, it being accepted that this proportion should never be more than five per cent.

(*k*) Nevertheless, it is realised that it may be necessary to take charge of and store for as long a period as possible, existing celluloid films, having regard to the possibility that it may not always be practicable from the point of view of expense or for any other reasons, to insist upon films specially made upon acetate base, or indeed on any films other than those in commercial circulation.

(*l*) If such celluloid films are taken into store for preservation purposes, the existing regulations as laid down by the Home Office must of necessity be followed in order to minimise the risk from fire, and it is not felt that any other precautions to ensure longevity than those already outlined need be laid down. It is, however, highly desirable that the temperature in the store shall be kept as low as possible above actual freezing point. A temperature of not less than 33° F. or more than 40° F. is recommended. Care

must be taken that whenever a film is withdrawn from this storage it is not immediately subjected to the much warmer normal surrounding temperature. This process of warming should be permitted to take place gradually over several hours.

(m) The film should be wound, gelatine outwards, in lengths of not more than approximately one thousand feet each, on cores of not less than 2 inches diameter made from inert non-corrodible material, e.g., bakelite, compressed paper or non-ferrous metal, and contained in boxes of similar material. The use of tinned sheet-iron boxes should be avoided on account of the risk of formation of rust, or furring, and consequent damage to the film.

(n) The films in their separate containers as mentioned above should be stored in suitable vaults in which the air is properly conditioned, so as to have a moisture content of approximately fifty per cent humidity and a temperature variation of not more than *plus* or *minus* five degrees at 60° F. The condition to be aimed at is the avoidance of temperature changes rather than the maintenance of any one particular temperature.

(o) It cannot, with confidence, be predicted how long the films so prepared and stored would really last before they began to deteriorate, either through failure of the photographic image or the disintegration of the transparent support, but it may be assumed that they would last for fifty years, and it is quite possible they would last a good deal longer. The end of the film, however, as an entity is not necessarily the end of the subject-matter, for it can be copied (reproduced by photography) and so, in a sense, begin its life all over again.

(p) It is recommended, therefore, that any films stored in accordance with the above suggestions should be taken out and examined very carefully at intervals of five years, and note should be taken of any signs of

deterioration. If and when these begin to appear, the films should be reproduced by photography—that is to say, if the original is a positive print a negative should be made from it and this negative stored in the place of the primary positive. If the primary positive is so far shrunken as to be difficult to give a satisfactory print by contact, the negative print should be made by projection. This new negative should last as long as the original positive, say, another fifty years, and at the end of that time a positive print may be made from it and this process of duplication may be repeated two, three, or four times; thus it will be seen that a film may be kept by a process of reproduction for at least three generations. It must not be forgotten, however, that at each duplication something of the quality of the original is necessarily lost, even if the utmost care is used and the process carried out by experts. It will thus be seen there is a definite limit to the number of times which the film can be duplicated.

(*q*) On the other hand, it is extremely probable that both photographic processes and the manufacture of transparent base will be vastly improved as time goes on, and that with this improvement the life of every film will be correspondingly increased, so that it may be assumed that, although the first duplication may become necessary after a lapse of fifty years or less, it may well be that the next period will not be limited to fifty years.

(*r*) It is important that films deposited for storage should never be used for projection. They should be used only for providing prints for this purpose.

(*s*) In order to ensure the best possible photographic quality after successive duplications, the following precautions should be carried out:

(1) A duplicating positive or duplicating negative stock should be used according to whether a positive or negative print is made.

(2) The contrast of the image must be kept below that which is customary in prints used for ordinary projection.

(3) Very high or very low densities must be avoided in order to secure as nearly linear reproduction as possible.

In order to avoid brittleness care should be taken not to harden the gelatine excessively.

Note: At the present time manufacturers are not producing either duplicating positive or duplicating negative stock on a safety base.

THE BRITISH FILM INSTITUTE PUBLICATIONS

(1) *Sight and Sound* (4 issues per year. 2s. 6d post free.) A magazine that contains general articles, reviews of American, British and foreign films released during the quarter, book notices, technical articles.

(2) *Monthly Film Bulletin* (7s. 6d. a year, post free) A critical record of educational, religious, documentary and entertainment films, together with an appraisement of their teaching value and suitability for different age groups.

(3) *Choosing a School Projector.* A practical and extremely valuable little book.

(4) *Using a School Projector.* A handbook dealing with the theory and practice of projection.

(5) *Report on History Teaching Films.*

(6) *Report on Science Teaching Films.*

(7) *Report on Geography Teaching Films.*

(8) *Interim Report on Modern Language Teaching by Films.*

(9) *Catalogue of British Medical Films.*

(10) *Report of the Conference on Films for Children.*

(11) *First List of Recommended Films for Children.*

(12) *Second List of Recommended Films for Children.*

(13) *List of Foreign Feature, Documentary and Short Films.*

(14) *List of Books on Cinematography.*

(15) *List of 16 mm. and 35 mm. Industrial Films.*

(16) *List of 16 mm. and 35 mm. Documentary Films, British and Foreign. Shorts and Cartoons. Films for Special Performances.*

(17) *National Film Library Catalogue.* A complete record of the films in the Preservation Section

(18) *National Film Library Loan Section Catalogue.* A list of some hundred odd 35 mm. and 16 mm. films available to members of the Institute.

(19) *Report on the Machinery for the Distribution and Display of Educational Films in Educational and Similar Institutions within the British Empire.*

SOME FILMS AVAILABLE IN THE LOAN SECTION OF THE NATIONAL FILM LIBRARY

" The Champion." (America, 1915. 2 reels, 22 mins) An early Chaplin comedy, one of the first he made for the Essanay Company.

" Drawings that Walk and Talk " (3 reels, 35 mins.) A composite film of reprints from cartoons, showing the development of the black-and-white animated cartoon from the earliest Vitagraph drawings of 1906, until 1933.

" Early Newsreels." (1 reel, 9 mins.) Records of everyday scenes and events, comprising the Gordon Highlanders leaving for the Boer War (1900) ; Funeral of Queen Victoria ; Turn-out of Leeds Fire Brigade (1902) ; Fashions.

" Early Trick Films." Pre-war trick films, from 1899-1912.

" Great Train Robbery." (America, 1903. 1 reel, 8 mins.) The first story-film of any importance in the history of the cinema and the starting point of the entertainment industry as we know it today.

" His Phantom Sweetheart." (America. 1 reel, 8 mins.) An unusually well-produced typical one-reel film of 1913 period.

" Invisible Thief." (France, 1900. 1 reel, 5 mins.) An amusing pre-war trick film comedy which owed its origin to *The Invisible Man*, by H. G. Wells. It was produced by Pathé.

" Lady of the Camelias." (France, 1910 2 reels, 32 mins.) Noteworthy, for Sarah Bernhardt takes the part of Marguerite.

" Life of Charles Peace " (Great Britain. 1 reel, 12 mins.) This is the earliest extant example of the British one-reel story-film.

" Marcus Lycinius." (Italy, 1910. 1 reel, 11 mins.) A typical Italian film of pre-war period : an early forerunner of the type of spectacle film, to be exemplified later in " Quo Vadis."

" The River." (America, 1937. 1 reel, 31 mins.) An impressionistic account of the history of the Mississippi since the occupation of the white man. Produced for the United States Department of Agriculture by Pare Lorentz.

" Stage Coach Driver and the Girl." (America, 1913. 1 reel, 14 mins.)
   One of the first films of Tom Mix, a thrilling cowboy story.
" Typical Budget." (Great Britain, 1924-25 1 reel, 17 mins) A bur-
   lesque of the contemporary news-reel film shown by the Film Society at
   its first performance.

FILMS OF EDUCATIONAL AND GENERAL INTEREST

ARTS AND CRAFTS
   " Etching." (1 reel, 8 mins.) Making an etching from the original
      drawing to the making of the final print.

AGRICULTURE
   " Horse Sense." (1 reel, 7 mins.) Shows the many ways pneumatic
      tyres can be advantageously used on farm vehicles.
   " Power Farming." (2 reels, 26 mins.) Representing a month by month
      calendar of farm operations.

COMMUNICATIONS
   " Airways to Cape Town." (3 reels, 45 mins.) An air journey from
      Croydon to Cape Town.
   " As Time Goes By." (1 reel, 10 mins.) A survey of progress in
      travelling methods.
   " Highway, The." (1 reel, 12 mins.) History of British roads during
      the last 2,000 years.

DOMESTIC SCIENCE
   " Pots and Pans." (2 reels, 12 mins.) Various fitments in an ordinary
      kitchen showing how by altering their position work can be made
      easier.

EDUCATION
   " At School in Tanganyika." (1 reel, 10 mins.) The activities of a
      Government Primary School.
   " Children at School." (3 reels, 27 mins.) Survey of the work of
      nursery schools.

GEOGRAPHY AND TRAVELS
   " Cocoa from the Gold Coast." (1 reel, 11 mins.) The production of
      the cocoa-beans in British West Africa.
   " Where East is West." (1 reel, 17 mins.) Journey by car through
      Morocco.
   " Austria." (2 reels, 23 mins.) Views of the Ausserfern.
   " Danube Valley." (2 reels, 24 mins.) Through the Danube valley.
      Produced for the Austrian State Travel Bureau.
   " Canada." (6 reels, 75 mins) From sea to sea : journey by railway
      from Vancouver to Montreal.
   " China." (1 reel, 4 mins.) Rice cultivation.

Great Britain
  " All that is England." (2 reels, 16 mins.)
  " Cornwall Calling." (2 reels, 17 mins.)
  " Lancashire, Home of Industry." (1 reel, 15 mins.)
  " Land of the Mountain and Flood." (1 reel, 10 mins.) Western Highlands of Scotland.
  " Westward Ho ! " (2 reels, 32 mins.) Journey in the West Country, concluding in Wales.

India and Ceylon
  " Crafts of Hunza." (1 reel, 14 mins)
  " Hunza Round the Year." (1 reel, 16 mins) The Hunza valley.
  " Jungle Gods." (1 reel, 10 mins.) Car journey through the forests and mountains of Ceylon.
  " Monsoon Island." (1 reel, 14 mins.) Views of the tea industry.
  " Negombo Coast." (1 reel, 12 mins) Methods of fishing in the Island of Ceylon.

Italy
  " Pompeii." (1 reel, 9 mins.) The ruins of Pompeii.
  " Sicilian Spring." (1 reel, 11 mins.) Sicily in Spring.

GENERAL INTEREST
  " Birth of a Robot " (1 reel, 7 mins.) Coloured model film, made by the Gasparcolor process.
  " Princess Kaguya." (3 reels, 35 mins.) A musical film adapted from an old Japanese legend.
  " Thirst." (2 reels, 12 mins.) Story of the Sudan showing that in crossing the desert thirst is man's greatest enemy.

INDUSTRY
  " Building Britain's Dependable Car." (1 reel, 12 mins.) The manufacture of the Austin car.
  " By the Water's Edge." (2 reels, 30 mins.) Journey by river to the works of the Ford Company.
  " Dunlop ' 90.' " (1 reel, 16 mins.) The manufacture of a motor-car tyre.
  " Here's to Beauty." (1 reel, 10 mins.) The production of motor-car bodies.
  " Here's to Comfort." (1 reel, 8 mins.) The making of car upholstery and fittings.
  " Men who Work." (1 reel, 10 mins.) Work in a car factory.
  " Silent and Certain." (1 reel, 10 mins.) The operation of the synchromesh gearbox.

ELECTRICAL
  " Country Currents." (1 reel, 18 mins.) The way in which electricity can be used in country districts.

" History of Electricity " (1 reel, 16 mins.) Historical sketch referring to the work of Thales and Faraday.

MINING AND QUARRYING
" Mining of Hematite Iron Ore at Beckermet, Cumberland." (1 reel, 13 mins)
" Slate Quarrying in North Wales " (3 reels, 46 mins)

OIL
" Lubrication by Shell." (2 reels, 26 mins.) Diagram of rock strata showing how oil is held in sand and porous rocks far below the surface.
" Scottish Shale Industry." (2 reels, 37 mins)

SHIPPING
" Wonder Ship *Queen Mary*." (1 reel, 13 mins.)

TIMBER
" Harvests of the Forest." (1 reel, 16 mins.) A film of timber and its uses.

BOOK PRINTING
(1 reel, 10 mins.) This film shows the various stages in printing including the setting up and manipulation of the monotype machine.

BREWING INK
(1 reel, 16 mins) Showing the manufacture of ink, from the arrival of the gall-nuts to the bottling

GAS
" How Gas is Made." (1 reel, 10 mins) Showing how coal is crushed and then heated in retorts where it is reduced to coke.

OPTICAL GLASS MANUFACTURE
(2 reels, 32 mins.) The ingredients of the glass, weighed and mixed, are melted in specially made fire-clay pots in a furnace.

MEDICINE
(3 reels, 35 mins) A survey of the various activities of the modern hospital in its endless war against disease.

PHYSICS
(2 reels, 21 mins.) A cine-diagram film to demonstrate the working of the internal combustion engine.

PUBLIC HEALTH AND HYGIENE
" Enough to Eat : A Nutrition Film." (2 reels, 21 mins.)

HIGHWAY CODE, THE
(1 reel, 10 mins.)

HOUSING PROBLEMS
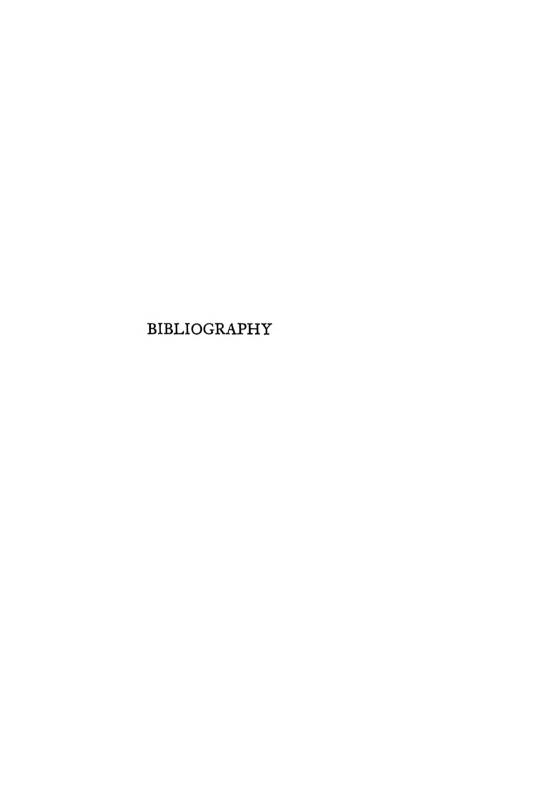(2 reels, 15 mins.) Showing the necessity for slum clearance.

DRIVING TEST
(1 reel, 8 mins.) An instructional film for the motorist who is preparing for the driving test.

SOCIAL SERVICE
" Eastern Valley." (2 reels, 16 mins.) A social experiment carried out in one of the mountain valleys of South Wales.
" Here is the Land." (2 reels, 20 mins.) Activities of the Land Settlement Association, under its land training scheme.
" Today and Tomorrow." (2 reels, 20 mins.) Activities of the National Council of Social Service.

ZOOLOGY
" Pond Life." (1 reel, 14 mins.)
" Romance of the Swan." (1 reel, 10 mins.)
" Under the Eaves." (2 reels, 31 mins.) The life and habits of the house martin.

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COMPILED BY M. JACKSON-WRIGLEY

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B—Biographies.

Ca—Cartoons.

Cb—Censorship.

Cc—Children and the Cinema.

Cd—Criticism.

Da—Documentary.

Db—Dramatic.

E—Education

Fa—Film Acting and Cinema Make-up.

Fb—Film Music.

G—General.

H—Historical and Descriptive.

K—Cinematography and Colour Cinematography.

La—Law.

Lb—Literature.

Pa—Projection.

Pb—Production.

R—Religious Films.

Sa—Scenario and Scenario Writing

Sb—Sociology and Psychology.

Sc—Sound Pictures.

Ta—Technique

Tb—Trade Organisation.

Tc—Travel Films.

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APPENDICES

APPENDIX I

PERIODICALS DEALING WITH THE CINEMA

Amateur Ciné World. (Link House) Monthly, 6d.
Amateur Photographer and Cinematographer. Weekly.
Billboard, The. Weekly. National Semi-trade. (American.)
Brevity. Monthly. National (American)
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    6d.
Daily Film Renter. (Wardour St., London, W.1) Daily, 2d.
Daily Screen World. Regional. Trade. (American.)
Educational Screen. (Harper Avenue, Chicago)
Era. (Incorporating the *Cinematograph Times*)
Exhibitor, The. Semi-monthly. Regional Trade (American)
Exhibitors' Daily Review. National. Trade. (American)
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Exhibitors' Herald and Motion Picture World. Weekly. National.
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Film Art. (Joubert Studios, Jubilee Place, Chelsea, London, S W.3)
    Quarterly, 1s.
Film Curb. Weekly. Regional. Trade. (American.)
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Film Daily Year Book. Encyclopædia of the Motion Picture Industry.
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Film Fun Magazine. Semi-monthly. National. Fan. (American.)
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M

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Ideal Kinema Monthly.
Illinois Exhibitor. Weekly. Regional. Trade. (American.)
Inside Facts. Weekly. West Coast. Trade. (American.)
Japanese Movie Magazine. Monthly. National. Fan.
Journal of the British Institute of Cinematography.
Kinematograph Weekly. (Odham's Press, London.) Weekly, 1s.
Kinematograph Year Book. (Odham's Press, London) Annually, 10s.
Life and Letters To-day. (Maiden Lane, London, W C.2.) Quarterly,
    2s. 6d.
Michigan Movie Magazine. Monthly. Regional. Trade. (American)
Monthly Film Bulletin. (Apply, British Film Institute, Gt. Russell St,
    London, W.C.1)
Motion Picture Almanac. (Regent St, London, W.1.) Annually, 20s.
Motion Picture Classic Monthly. National. Fan. (American.)
Motion Picture Digest. Weekly Regional. Trade. American.
Motion Picture Journal. Weekly. Regional Trade. (American)
Motion Picture Magazine. Monthly. National Fan (American.)
Motion Picture News. Weekly National. Trade (American.)
Motion Picture Projectionist. Monthly National. Trade. (American.)
Motion Picture Record. Weekly. Regional Trade. (American)
Motion Picture Review. Semi-monthly. Regional. (American)
Motion Picture Stories. Weekly. National Fan. (American)
Motion Picture Times Weekly Regional. Trade. (American.)
Motion Picture To-day. National. Trade (American)
Movie Age Weekly. Regional. Trade. (American)
National Exhibitor. Semi-monthly. Regional. Trade. (American.)
New England Film News. Weekly. Regional. Trade. (American.)
New York State Exhibitor. Semi-monthly. Regional Trade. (American.)
Ohio Showman. Regional. Trade. Weekly. (American)
Pacific Coast Independent Exhibitor Semi-monthly. Regional. Trade.
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Philadelphia Film World. Weekly. Regional. Trade (American)
Photoplay Magazine. Monthly. National. Fan. (American.)
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Screen Secrets Magazine. Monthly. National. Fan. (American.)
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Screen Press. Weekly. National. Trade. (American.)
Sight and Sound. (British Film Institute, London) Quarterly, 6d.
Sound Waves. Semi-monthly. West Coast. (American.)
To-day's Cinema. (Cinema Press, London.) Daily, 1d. Wednesday's
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Variety Weekly. National. Semi-trade. (American.)

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APPENDIX II

SOME OUTSTANDING FILMS 1919-37

The films mentioned below are grouped according to what the outstanding feature of the film is, whether it be—Acting, Cinematography (camera-work), Direction, Editing or Cutting, Treatment of Story (Theme).

ACTING

1919 " Broken Blossoms." (American.)
Studio.—Famous-Players-Lasky.
Director.—D. W. Griffith.
Camera-man.—Hendrick Sartov.
Chief Actors.—Richard Barthelmess. Donald Crisp. Lilian Gish.
Distributed in the United Kingdom.—The Film Booking Offices.

1922 " Foolish Wives." (American.)
Studio.—American Universal Jewel.
Director.—Erich von Stroheim.
Camera-man.—William Daniels.
Chief Actors.—Erich von Stroheim. Miss du Pont. Maude George. Mae Busch.
Distributed in the United Kingdom.—Universal Film Co.

1923 " Atonement of Gosta Berling." (Swedish.)
Studio.—Swedish Biograph Co.
Director.—Mauritz Stiller.
Chief Actors —Lars Hanson. Greta Garbo. Jenny Hasselquist. Mona Martenson.
Distributed in the United kingdom.—The Philips Film Co.

— " Greed."
Studio.—Metro-Goldwyn-Mayer Pictures Ltd., Culver City.
Director.—Erich von Stroheim.
Scenario.—June Mathis and Erich von Stroheim.
Camera-men —Ben. F. Reynolds and W. A. Daniels.
Distributed in the United Kingdom.—Metro-Goldwyn-Mayer.
Chief Actors.—Zazu Pitts. Gibson Gowland. Jean Hersholt.
Length of film.—9,279 feet.

Running time.—56 minutes.
Certificate " A."

1924 " Hunchback of Notre Dame."
Studio —Universal Pictures
Director —Wallace Worsley.
Scenario —Edward T. Lowe.
Camera-man —Robert Newhart.
Distributed in the United Kingdom.—Universal Pictures.
Chief Actors.—Lon Chaney. Norman Kerry. Patsy Ruth Miller.
Length of film.—6,917 feet.
Running time —89 minutes.
Certificate " A."

1925 " Lady Windermere's Fan " (American)
Studio.—Famous-Players-Lasky.
Director —Ernst Lubitsch
Scenario —Julien Josephson.
Camera-man.—Charles van Enger
Chief Actors.—Ronald Colman Bert Lytell. Mae MacEvoy
   Irene Rich.
Distributed in the United Kingdom.—Paramount Pictures.

— " Peter Pan."
Studio —Paramount Pictures Ltd.
Director.—Herbert Brenon.
Scenario.—Willis Goldbeck.
Distributed in the United Kingdom —Paramount Films Ltd.
Chief Actors —Ernest Torrence. Cyril Chadwick. Betty Bronson.
   Virginia Brown Faire Anna May Wong.
Length of film —10,005 feet.
Certificate " U."

1926 " Beau Geste."
Studio.—Paramount Pictures Ltd.
Director.—Herbert Brenon.
Scenario.—Paul Schofield.
Distributed in the United Kingdom.—Paramount Films Ltd.
Chief Actors.—Ronald Colman. Neil Hamilton. Ralph Forbes.
   William Powell. Victor McLaglan. Alice Joyce. Noah Beery.
   Mary Brian.
Length of film.—10,900 feet.
Certificate " A."

— " Hotel Imperial " (American.)
Studio —Famous-Players-Lasky.
Director.—Erich Pommer.
Scenario —Jules Furthman.
Camera-man.—Bert Glennon.

Chief Actors.—James Hall. George Siegman. Pola Negri.
Distributed in the United Kingdom.—Paramount Pictures.

1927 " Passion de Jeanne d'Arc." (French.)
Studio.—Société Générale de Films.
Director.—Karl Dreyer.
Scenario.—Karl Dreyer.
Camera-man.—Rudolph Maté
Distributed in the United Kingdom.—Alpha Film Corporation.

1928 " Circus."
Studio.—Charles Chaplin Film Corporation Ltd.
Director.—Charles Chaplin.
Scenario.—Charles Chaplin.
Camera-men.—Jack Wilson and Mark Mariatt.
Chief Actors.—Charles Chaplin, Myrna Kennedy.
Distributed in the United Kingdom —United Artists.
Length of film —6,400 feet.
Running time —65 minutes.
Certificate " U."

— " The Spy." (German.)
Studio.—Ufa Film Co.
Director.—Fritz Lang.
Scenario.—Thea von Harbou.
Chief Actors.—Rudolph Klein-Rogge. Lien Deyers. Fritz Raso.
　　Hertha von Walther. Gerda Maurius

1929 " Disraeli "
Studio.—Warner Brothers.
Director.—Alfred E. Green.
Scenario.—Julian Josephson.
Chief Actors —George Arliss. David Torrence. Joan Bennett.
　　Florence Arliss.
Length of film.—7,979 feet.
Running time —88 minutes.
Certificate " U."

— " The Four Feathers."
Studio.—Paramount Pictures Ltd.
Directors.—Merian C. Cooper, Ernest B. Schoedsack, and Lothar
　　Mendes.
Scenario.—Howard Estabrook.
Distributed in the United Kingdom.—Paramount Films Ltd.
Chief Actors.—Richard Arlen. Clive Brook. Theodor von Eltz.
　　William Powell. Fay Wray. Noah Beery.
Length of film.—7,580 feet.
Certificate " U."

1929 " Hell's Heroes " (American)
Studio —Universal Films Ltd.
Director —William Wyler.
Scenario —Tom Reed.
Camera-man —George Robinson.
Chief Actors —Raymond Hatten. Charles Bickford Fred Kohler.

— " Nina Petrovna " (German)
Studio —Ufa Film Co
Supervisor —Erich Pommer.
Director —Hans Schwartz.
Camera-man —Karl Hoffmann.
Chief Actors —Brigette Helm. Franz Lederer Warwick Ward.
Distributed in the United Kingdom.—Gaumont-British.
Certificate " A "

1930 " Anna Christie "
Studio —Metro-Goldwyn-Mayer.
Director —Clarence Brown.
Scenario —Frances Marion.
Camera-man.—William Daniels.
Chief Actors —Charles Bickford. George F. Marion. Greta
    Garbo. Marie Dressler.
Distributed in the United Kingdom.—Metro-Goldwyn-Mayer.
Length of film —5,176 feet (silent) , 8,147 feet (sync.).
Certificate " A."

— " Outward Bound "
Studio —Warner Brothers
Director.—Robert Milton.
Chief Actors —Leslie Howard. Douglas Fairbanks (jr.). Helen
    Chandler. Beryl Mercer
Distributed in the United Kingdom.—Warner Brothers.
Length of film —7,369 feet.
Running time.—81 minutes.
Certificate " A."

1932 " Grand Hotel."
Studio —Metro-Goldwyn-Mayer.
Director —Edmund Goulding.
Scenario.—Vicki Baum.
Camera-man —William Daniels.
Chief Actors —J Barrymore. Wallace Beery. Greta Garbo.
    Joan Crawford
Distributed in the United Kingdom.—Metro-Goldwyn-Mayer.
Length of film.—10,086 feet.
Running time —112 minutes.
Certificate " A."

1933 " The Barretts of Wimpole Street."
    Studio.—Metro-Goldwyn-Mayer.
    Director.—Sidney Franklin.
    Chief Actors.—Charles Laughton. Frederic March. Norma
        Shearer. Maureen O'Sullivan. Katharine Alexander. Una
        O'Connor.
    Length of film.—9,720 feet.
    Running time.—108 minutes.
    Certificate " U."

— " Cavalcade."
    Studio.—20th Century Fox Film Company Ltd
    Director.—Frank Lloyd.
    Scenario.—Reginald Berkeley.
    Chief Actors —Clive Brook. Herbert Mundin. Frank Lawton.
        Diana Wynyard. Una O'Connor. Ursula Jeans.
    Distributed in the United Kingdom.—The Fox Film Co.
    Length of film.—10,073 feet.
    Certificate " U."

— " The Invisible Man."
    Studio.—The Universal Pictures Corporation Ltd.
    Director.—James Whale.
    Scenario.—R. C. Sherriff.
    Camera-man.—Arthur Edeson.
    Chief Actors.—Claude Rains. William Harrigan. Gloria Stuart
    Distributed in the United Kingdom.—The Universal Pictures
        Corporation.
    Length of film.—6,494 feet.
    Running time.—
    Certificate " A."

— " Private Life of Henry VIII."
    Studio.—London Film Productions Ltd.
    Director.—Alexander Korda.
    Scenario.—Lajos Biro and Arthur Wimperis.
    Camera-man.—Georges Perinal.
    Chief Actor.—Charles Laughton.
    Running time.—96 minutes.
    Distributed in the United Kingdom.—United Artists Corporation
        Ltd.
    Length of film.—8,664 feet.
    Certificate " A."

— " Scarlet Pimpernel."
    Studio.—London Film Productions Ltd.
    Producer.—Alexander Korda.
    Director.—Harold Young.

Scenario —Lajos Biro, Sam Bermann, Robert Sherwood and
Arthur Wimperis.
Camera-man.—Harold Rosson.
Chief Actors —Leslie Howard. Raymond Massey. Merle Oberon.
Distributed in the United Kingdom —United Artists Corporation
Ltd
Length of film —8,904 feet
Running time —99 minutes.
Certificate " A."

1934 " Merry Widow."
Studio —Metro-Goldwyn-Mayer.
Producer.—Ernst Lubitsch.
Director.—Ernst Vajda.
Chief Actors.—Maurice Chevalier. Edward Everett Horton.
Jeannette MacDonald. Una Merkel.
Distributed in the United Kingdom.—Metro-Goldwyn-Mayer.
Length of film.—8,852 feet.
Running time.—98 minutes.
Certificate " A."

1935 " Clairvoyant."
Studio —Gaumont-British.
Director —Maurice Elvey.
Scenario.—Charles Bennett and Brian Wallace
Camera-man.—G MacWilliams
Chief Actors.—Claude Rains. Fay Wray.
Distributed in the United Kingdom.—Gaumont-British
Length of film.—7,254 feet
Running time.—81 minutes.
Certificate " A."

— " Anna Karenina."
Studio.—Metro-Goldwyn-Mayer.
Director.—Clarence Brown.
Chief Actors.—Fredric March. Freddie Bartholomew. Basil
Rathbone. Greta Garbo. Maureen O'Sullivan. May Robson.
Joan Marsh.
Length of film —8,402 feet.
Running time.—93 minutes.
Certificate " A."

— " Escape Me Never."
Studio.—British and Dominions Film Corporation Ltd.
Producer.—Herbert Wilcox.
Director.—Paul Czinner.
Scenario.—R. J. Cullen.
Camera-man.—Georges Perinale.

Chief Actors.—Hugh Sinclair. Griffith Jones. Elizabeth Bergner.
Distributed in the United Kingdom.—United Artists Corporation
Ltd.
Length of film.—8,584 feet.
Running time.—95 minutes.
Certificate " A."

1935 " Lives of a Bengal Lancer."
Studio.—Paramount Pictures Ltd.
Director.—Henry Hathaway.
Scenario.—Waldemar Young, J. L. Balderston, and Achmed
Abdullah.
Camera-man.—Charles Lang.
Distributed in the United Kingdom.—Paramount Films Ltd.
Chief Actors.—Gary Cooper. Richard Cromwell. Franchot Tone.
Sir Guy Standing.
Length of film.—9,794 feet.
Certificate " U."

1936 " Dante's Inferno."
Studio.—20th Century Fox Film Co. Ltd.
Director.—Harry Lachman.
Scenario.—Philip Klein and Robert M. Yost.
Chief Actors.—Spencer Tracy. Henry B. Walthall. Alan Dinehart.
Claire Trevor.
Distributed in the United Kingdom.—The Fox Film Co. Ltd.
Length of film.—8,080 feet.
Certificate " A."

— " Dodsworth."
Studio.—Metro-Goldwyn-Mayer.
Producer.—Samuel Goldwyn.
Director.—W. Wyler.
Scenario.—Danny Mandel.
Camera-man.—Rudolph Mate.
Chief Actors.—Walter Huston. Paul Lukas. Ruth Chatterton.
Mary Astor.
Distributed in the United Kingdom.—United Artists Corporation
Ltd.
Length of film.—9,290 feet.
Running time.—103 minutes.
Certificate " A."

— " Little Lord Fauntleroy."
Studio.—Selznick International Pictures Incorporated.
Producer.—David O. Selznick.
Director.—John Cromwell.
Scenario.—Sir Hugh Walpole.

Camera-man.—Charles Rosher.
Chief Actors —Freddie Bartholomew. C. Aubrey Smith. Mickey
    Rooney. Dolores Costello Barrymore.
Distributed in the United Kingdom.—United Artists Corporation
    Ltd.
Length of film —9,361 feet.
Running time —104 minutes.
Certificate " A."

1936   " Fury "
    Studio —Metro-Goldwyn-Mayer.
    Director —Fritz Lang
    Producer.—Joseph L. Mankiewicz.
    Chief Actors.—Spencer Tracy.   Walter Abel   Bruce Cabot
      Edward Ellis Sylvia Sidney Leila Bennett. Esther Dale.
    Running time.—92 minutes.
    Length of film.—8,292 feet.
    Certificate " A."

—   " Modern Times."
    Studio —Charles Chaplin Film Corporation Ltd
    Director —Charles Chaplin.
    Scenario —Charles Chaplin.
    Camera-men.—Rollie Totheroh and Ira Morgan
    Chief Actors.—Charles Chaplin. Paulette Goddard
    Distributed in the United Kingdom —United Artists Corporation
      Ltd
    Length of film.—8,018 feet.
    Running time —90 minutes.
    Certificate " U."

—   " Mutiny on the Bounty."
    Studio.—Metro-Goldwyn-Mayer
    Director —Frank Lloyd.
    Camera-man —Arthur Edeson
    Chief Actors.—Charles Laughton. Clark Gable Franchot Tone.
      Herbert Mundies. Francis Lister. Spring Byington. Marion
      Clayton

—   " Passing of the Third Floor Back "
    Director.—Berthold Viertel.
    Scenario.—Michael Hogan and Alma Revelli.
    Camera-man —Coveant.
    Chief Actors —Conrad Veidt. Rene Ray
    Distributed in the United Kingdom.—Gaumont-British
    Length of film.—8,152 feet
    Running time.—90 minutes.
    Certificate " U."

1936 " Rembrandt."
> Studio.—London Film Productions Ltd.
> Producer.—Alexander Korda.
> Director.—Alexander Korda.
> Scenario —Carl Zuckmayer.
> Camera-man.—Georges Perinal.
> Chief Actors.—Charles Laughton. Gertrude Lawrence. Elsa Lanchester.
> Distributed in the United Kingdom.—United Artists Corporation Ltd.
> Length of film.—7,913 feet.
> Running time.—88 minutes.
> Certificate " A."

— " Romeo and Juliet."
> Studio.—Metro-Goldwyn-Mayer.
> Director.—George Cukor.
> Producer.—Frederick Hope.
> Scenario.—
> Camera-man.—William Daniels.
> Chief Actors.—Leslie Howard. John Barrymore. Basil Rathbone. C. Aubrey Smith. Conway Tearle. Norma Shearer. Edna May Oliver. Virginia Hammond.
> Length of film.—11,201 feet.
> Running time.—124 minutes.

— " Treasure Island."
> Studio.—Metro-Goldwyn-Mayer.
> Director.—Victor Fleming.
> Chief Actors —Wallace Beery. Jackie Cooper. Lewis Stone. Lionel Barrymore. Otto Kruger. Nigel Bruce. Dorothy Peterson.
> Length of film.—9,269 feet.
> Running time.—103 minutes.
> Certificate " U."

1937 " Love from a Stranger."
> Studio.—Trafalgar Film Productions Ltd.
> Producer.—Max Schach.
> Director.—Rowland V. Lee.
> Scenario.—Frances Marion.
> Camera-man.—Philip Tannura.
> Chief Actors.—Basil Rathbone. Ann Harding.
> Distributed in the United Kingdom.—United Artists Corporation Ltd.
> Length of film.—7,750 feet.
> Running time.—86 mins.
> Certificate " A."

1937 " Man Who Could Work Miracles."
    Studio.—London Film Productions Ltd.
    Producer.—Alexander Korda.
    Director.—Lothar Mendes.
    Scenario.—H. G. Wells.
    Camera-men.—Bernard Browne and Maurice Ford.
    Chief Actors.—Rowland Young. Ralph Richardson. Ernest
        Thesiger. Joan Gardner.
    Distributed in the United Kingdom.—United Artists Corporation
        Ltd.
    Length of film.—7,384 feet.
    Running time.—82 minutes.
    Certificate " U."

CINEMATOGRAPHY (Camera Work)

1921 " Destiny." (German.)
    Studio.—Decla-Bioskop.
    Director.—Fritz Lang.
    Scenario.—Thea von Harbou.
    Camera-man.—Erich Nitschmann.
    Chief Actors.—Bernard Goetzke. Walther Janssen. Lil Dagover.
    Distributed in the United Kingdom.—Philips Film Co.

— " Four Horseman of the Apocalypse " (American.)
    Studio.—Metro-Goldwyn-Mayer.
    Director.—Rex Ingram.
    Scenario.—June Mathis.
    Camera-man.—John R. Seitz
    Chief Actors.—Rudolph Valentino Alice Terry.
    Distributed in the United Kingdom.—Metro-Goldwyn-Mayer.

— " Way Down East." (American.)
    Studio.—
    Director.—D. W. Griffith.
    Camera-man.—Hendrik Sartov.
    Chief Actors.—Richard Barthelmess. Lilian Gish.

1922 " Dracula." (German.)
    Studio.—Prana Film Co.
    Director.—F. W. Murnau.
    Scenario.—Henrik Galeen.
    Camera-man.—Fritz Arno Wagner.
    Design.—Albin Grau.
    Chief Actors.—Max Schreck. Gustav von Wangenheim. Alexander
        Granach. Greta Schroeder.

1923 " Greed." (American.)
     Studio.—Metro-Goldwyn-Mayer.
     Director.—Erich von Stroheim.
     Camera-man.—Ben Reynolds.
     Chief Actors.—Gibson Gowland. Chester Conklin. Zazu Pitts.
       Jean Hersholt.

— " Robin Hood " (American.)
     Studio.—Allied Artists.
     Director.—Allan Dwan.
     Scenario.—Lotta Woods.
     Camera-man.—Arthur Edeson.
     Chief Actors.—Douglas Fairbanks. Sam de Grasse Paul Dickey
       Enid Bennett.
     Distributed in the United Kingdom.—United Artists Corporation.

— " Siegfried." (German.)
     Studio.—Decla-Bioscop.
     Director.—Fritz Lang.
     Scenario—Thea von Harbau.
     Camera-man.—Karl Hoffmann.
     Chief Actors —Theodor Loos. Bernard Goetzke. Margarete
       Schoen. Hanna Ralph. Gertrude Arnold.
     Distributed in the United Kingdom.—Graham-Wilcox Produc-
       tions

— " The Ten Commandments "
     Studio.—Paramount Films Ltd.
     Director.—Cecil B. De Mille.
     Scenario.—Jeanie Macpherson.
     Distributed in the United Kingdom —Paramount Films Ltd.
     Chief Actors.—Theodore Roberts. Charles de Roche. Richard Dix.
       Rod La Roque. Estelle Taylor. Leatrice Joy. Nita Naldi.
     Length of film —10,700 feet.
     Certificate " U."

1925 " Big Parade." (American.)
     Studio.—Metro-Goldwyn-Mayer.
     Director.—King Vidor.
     Scenario.—Harry Behn.
     Camera-man.—John Arnold.
     Chief Actors.—John Gilbert. Karl Dane. Renée Adorée.
     Distributed in the United Kingdom.—Jury Metro-Goldwyn.

— " Gold Rush." (American.)
     Studio.—Allied Artists.
     Director.—Charles Chaplin.
     Scenario.—Charles Chaplin.

Camera-man.—Jack Wilson.
Chief Actors.—Charles Chaplin. Mark Swain. Georgia Hale.
Distributed in the United Kingdom.—United Artists Corporation.

1925 " Thief of Bagdad." (American.)
Studio.—Allied Artists.
Director.—Raoul Walsh.
Scenario.—Lotta Woods.
Camera-man.—Arthur Edeson.
Chief Actors.—Douglas Fairbanks. Julianne Johnson. Anna May
   Wong.
Distributed in the United Kingdom.—United Artists Corporation.

— " Vaudeville." (German.)
Studio.—Ufa Films.
Supervisor.—Erich Pommer.
Director.—E. A. Dupont.
Scenario.—Leo Birinski.
Chief Actors.—Emil Jannings Warwick Ward. Lya de Putti.
Distributed in the United Kingdom —Wardour Films Ltd.

1926 " Black Pirate." (American.)
Studio.—Allied Artists.
Director.—Alfred Parker.
Scenario.—Lotta Woods.
Camera-man —Henry Sharp.
Design.—Karl Oscar Borg
Chief Actors.—Douglas Fairbanks. Donald Crisp. Billie Dove.
Distributed in the United Kingdom.—United Artists Corporation.
(In Technicolour Process.)

— " Expiation." (Soviet.)
Studio.—Sovkino.
Director.—L. V. Kuleshov.
Scenario.—Schklovsky.
Camera-man.—Kusnetsov.
Chief Actors.—Fred Forell. S. Komarov. A. Choklova. Edith P.
   Podobed.

— " Faust." (German.)
Studio.—Ufa Films.
Director.—F. W. Murnau.
Scenario.—Hans Kyser.
Camera-man.—Karl Freund.
Designer.—Walther Rohrig.
Chief Actors.—Emil Jannings. Gosta Ekman. Camilla Horn.
   Yvette Guilbert.
Distributed in the United Kingdom.—Wardour Films.

1926 " Metropolis." (German.)
    Studio.—Ufa Films.
    Director.—Fritz Lang.
    Scenario.—Thea von Harbou.
    Camera-man.—Karl Freund.
    Chief Actors —Gustav Frohlich. Rudolph Klein-Rogge. Alfred
      Abel Brigitte Helm.
    Distributed in the United Kingdom.—Wardour Films

— " Waltz Dream." (German.)
    Studio.—Ufa Films.
    Director.—Ludwig Berger.
    Scenario.—Robert Liebmann.
    Camera-man.—Werner Brandes.
    Chief Actors —Mady Christians. Willy Fritsch. Lydia Potechina.
    Distributed in the United Kingdom.—Wardour Films.

— " Wedding March " (American.)
    Studio.—Famous-Players-Lasky.
    Director.—Erich von Stroheim.
    Scenario.—Harry Carr.
    Camera-man.—Hal Mohr.
    Chief Actors.—Erich von Stroheim. Fay Wray. Maude George.
      Zazu Pitts.
    Distributed in the United Kingdom.—Paramount Pictures.

1927 " Circus." (American.)
    Studio —Allied Artists.
    Director.—Charles Chaplin.
    Scenario.—Charles Chaplin.
    Camera-man.—Jack Wilson.
    Designs.—Charles D. Hall.
    Chief Actors.—Charles Chaplin. Myrna Kennedy.
    Distributed in the United Kingdom.—United Artists Corporation.

1928 " City Lights." (American.)
    Studio.—United Artists Corporation.
    Director —Charles Chaplin.
    Scenario.—Charles Chaplin.
    Camera-man.—Henry Conjäger.
    Chief Actors.—Charles Chaplin. Harry Myers Virginia Cherrill.
    Distributed in the United Kingdom.—United Artists Corporation.

— " Docks of New York." (American.)
    Studio.—Famous-Players-Lasky.
    Director.—Josef von Sternberg.
    Scenario.—Jules Furthman.
    Camera-man.—Harold Rosson.
    Chief Actors.—George Bancroft. Olga Baclanova. Betty Compson.

1928 " Eleventh Year." (Soviet.)
Studio.—Vufku.
Director.—Dziga-Vertov.
Camera-man.—Kauffmann.
(One of several films for propaganda purposes—celebrating the
anniversary of the Russian Revolution)

— " Last Command." (American.)
Studio —Famous-Players-Lasky.
Director.—Josef von Sternberg.
Scenario —John F. Goodrich.
Camera-man.—Bert Glennon.
Chief Actors.—Emil Jannings. William Powell Evelyn Brent
Distributed in the United Kingdom.—Paramount Pictures

— " Pandora's Box " (German.)
Studio.—Nero Films
Director.—G. W. Pabst.
Camera-man —Gunthur Kranpf.
Chief Actors.—Gustav Diessel. Fritz Kortner. Louise Brooks.

— " Piccadilly."
Studio.—British Instructional Pictures
Director.—E. A. Dupont
Camera-man.—Werner Brandes
Chief Actors —Jameson Thomas. Gilda Grey. Anna May Wong.
Distributed in the United Kingdom.—Wardour Films.

— " Shooting Stars."
Studio —British Instructional Pictures.
Director.—Anthony Asquith.
Scenario.—John Orton.
Camera-man.—G. Harris.
Chief Actors.—Donald Calthrop. John Longden. Anette Benson.
Distributed in the United Kingdom.—Patrice Films.

— " The Spy." (German.)
Studio.—Ufa Films.
Director.—Fritz Lang.
Scenario.—Thea von Harbou.
Distributed in the United Kingdom.—W. and F. Films.

1929 " Blaue Engel." (German.)
Studio.—Ufa Films.
Director.—Josef von Sternberg.
Supervisor.—Erich Pommer.
Scenario.—Robert Liebmann.
Camera-man.—Gunther Rittau.

N

Chief Actors.—Emil Jannings. Kurt Gerron. Marlene Dietrich. Rosa Valletti

Distributed in the United Kingdom —Wardour Films

1929 " New Babylon " (Soviet)
Studio —Sovkino
Scenario.—G. Kozintscv
Camera-man —A Moskvin
Chief Actors —E. Kuzmina   D. Gutman.   S   Gerasimov.   A Arnold.

— " The Virginian."
Studio.—Paramount Pictures.
Director.—Victor Fleming.
Scenario —Howard Estabrook.
Camera-man —J. Roy Hunt.
Chief Actors —Walter Huston   Gary Cooper.   Richard Arlen. Mary Brian

— " White Hell of Pitz-Palu "
Studio —Sokal
Director —G W Pabst.
Scenario —Dr. Arnold Fanck
Camera-man —Hans Schnœnberger
Chief Actors —Gustav Dissl. Leni Riefenstahl Ernst Peterson.
Distributed in the United Kingdom —Universal Pictures

1930 " All Quiet on the Western Front." (American)
Studio —Universal Films.
Director.—Lewis Milestone
Scenario.—Maxwell Anderson.
Camera-man.—Arthur Edeson.
Chief Actors.—Louis Wolheim. Lewis Ayres   John Wray.

— " Big House." (American.)
Studio.—Metro-Goldwyn-Mayer.
Director.—George Hill
Scenario.—Frances Marion.
Camera-man.—Harold Wenstrom.
Chief Actors.—Wallace Beery. Chester Morris Lewis Stone.

— " Cimarron " (American.)
Studio.—Radio Pictures.
Director.—Wesley Ruggles
Scenario.—Howard Estabrook.
Camera-man.—Edward Cronjager.
Chief Actors.—Richard Dix. William Collier, jnr. Irene Dunne. Estelle Taylor.

1931 " Dishonoured."
Studio —Paramount Pictures Ltd.
Director —Josef von Sternberg
Scenario —Daniel N. Rubin.
Chief Actors —Victor McLaglen. Marlene Dietrich
Distributed in the United Kingdom —Paramount Films Ltd
Length of film —8,167 feet.
Certificate " A."

1931 " Dreigroschenoper " (German)
Studio.—Deutsch-First-National
Director.—G. W Pabst
Scenario.—Lonisa, Vajda, Balaza.
Camera-man —Fritz Arno Wagner
Chief Actors —Rudolf Forster Fritz-Rasp Valeska Gert Vladi-
mir Sokolov. Reinhold Schunzel Carola Neher Lotte Lenja

1932 " Rain "
Director —Joseph M Schenck
Scenario —Screen adaptation by Maxwell Anderson.
Camera-man —Oliver Marsh
Chief Actors —Walter Huston Joan Crawford
Distributed in the United Kingdom.—United Artists Corporation.
Length of film —8,014 feet.
Running time —89 minutes
Certificate " A."

— " Shanghai Express."
Studio —Paramount Pictures Ltd.
Director.—Josef von Sternberg
Scenario —Jules Furthman.
Distributed in the United Kingdom.—Paramount Films Ltd
Camera-man —Lee Garmes.
Chief Actors.—Clive Brook Warner Oland. Eugene Pallette.
Marlene Dietrich. Anna May Wong
Length of film —7,400 feet
Certificate " A "

1934 " Count of Monte Cristo."
Studio.—Reliance Pictures Incorporated.
Director.—Rowland V. Lee
Scenario.—Philip Dunne, Dan Totheroh and Rowland V Lee
Camera-man —Peverall J. Marley.
Chief Actors —Robert Donat. Elissa Landi
Distributed in the United Kingdom —United Artists Corporation
Ltd.
Length of film —10,379 feet.
Running time.—115 minutes.
Certificate " U."

1934 " Trader Horn "
(A saga of the Dark Continent.)
Studio —Metro-Goldwyn-Mayer.
Director —W. S van Dyke.
Scenario.—Dale van Every.
Camera-man.—Clyde de Vinna
Chief Actors —Harry Carey Edwina Booth. Olive Golden. Mrs
    Harry Carey
Length of film —10,946 feet.
Running time —119 minutes.
Certificate " U."

1935 " Call of the Canyon "
Studio —Paramount Pictures Ltd.
Director.—Victor Fleming.
Scenario.—Doris Schroeder and Edfrid Bingham
Distributed in the United Kingdom.—Paramount Films Ltd.
Chief Actors —Richard Dix. Lois Wilson. Marjorie Daw.
Length of film.—6,890 feet.
Certificate " U."

1936 " Good Earth "
Studio.—Metro-Goldwyn-Mayer.
Director.—Sidney Franklin.
Producer —Owen Dair.
Scenario.—Dan Sayre Grossback.
Camera-man.—
Chief Actors —Paul Muni. Walter Connolly Charley Grapewin.
    Luise Rainer. Tilly Losch
Length of film.—12,385 feet.
Running time —138 minutes.
Certificate " A."

— " The Thin Man."
Studio.—Metro-Goldwyn-Mayer.
Director.—W. S. van Dyke.
Chief Actors —William Powell Nat Pendleton. Myrna Loy.
    Maureen O'Sullivan.
Length of film.—8,178 feet
Running time.—91 minutes.
Certificate " A."

1937 " Elephant Boy."
Studio.—London Film Productions Ltd
Producer.—Alexander Korda.
Directors —Robert Flaherty and Zoltan Korda.
Scenario.—Akos Tolnay and Marcia de Silva.
Camera-man.—Osmond Borrodail.

Chief Actors.—Sabu. W E Holloway. Walter Hudd.

Distributed in the United Kingdom.—United Artists Corporation Ltd.

Length of film —7,373 feet.

Running time —82 minutes.

Certificate " U."

1937 " Fire over England "

Studio.—London Film Productions Ltd

Producers —Alexander Korda and Erich Pommer.

Director —W. K Howard.

Scenario —Clemence Dane and Sergi Nolbandov.

Camera-man —James Wang Howe.

Chief Actors —Raymond Massey. Laurence Olivier. Leslie Banks Flora Robson. Vivien Leigh.

Distributed in the United Kingdom —United Artists Corporation Ltd.

Length of film.—8,246 feet

Running time —92 minutes.

Certificate " U."

DIRECTION

1922 " Doctor Mabuse." (German)

Studio —Decla-Bioskop.

Director —Fritz Lang.

Scenario.—Thea von Harbou.

Camera-man —Karl Hoffmann.

Design —Otto Hunte.

Chief Actors.—Rudolph Klein-Rogge. Paul Richter. Bernard Goetzke. Lydia Potechina.

Distributed in the United Kingdom —Grangers Films Ltd.

1923 " Woman of Paris."

Studio —Charles Chaplin Film Corporation.

Director.—Charles Chaplin.

Scenario —Charles Chaplin.

Camera-man.—

Chief Actors —Adolph Menjou. Edna Purviance.

Distributed in the United Kingdom.—United Artists Corporation Ltd.

Length of film.—7,650 feet.

Running time —80 minutes.

Certificate " A."

1924 " Forbidden Paradise." (American.)

Studio.—Famous-Players-Lasky.

Director.—Ernst Lubitsch.
Scenario.—Agnes Christine Johnson.
Camera-man.—Charles van Enger.
Chief Actors.—Adolphe Menjou. Rod la Rocque. Pola Negri.
   Pauline Starke.
Distributed in the United Kingdom.—Paramount Pictures.

1924 " Monsieur Beaucaire "
   Studio.—Paramount Pictures.
   Director.—Sidney Olcott
   Scenario.—Forrest Halsey.
   Distributed in the United Kingdom.—Paramount Films Ltd.
   Chief Actors.—Rudolph Valentino. Lois Wilson. Bebe Daniels.
   Length of film.—9,859 feet.

—   " Postmaster." (Soviet.)
   Studio.—MejrabpomRuss
   Scenario.—Fitsdor Ooep
   Chief Actors.—Ivan Moskivin W. S Malinovskaia B. Tamarin
   Distributed in the United Kingdom.—Film Booking Office

1925 " Battleship Potemkin." (Soviet)
   Studio.—1st Studio Goskino
   Director.—S M. Eisenstein.
   Camera-man.—Edward Tissé.
   Musical score.—Edward Méisel

—   " Student of Prague " (German)
   Studio.—Sokal Films.
   Director.—Henrik Galeen.
   Camera-man.—Gunthur Krampf.
   Chief Actors.—Conrad Veidt Werner Krauss. Ferdinand von
      Alten. Agnes Esterhazy. Elizza La Porte.
   Distributed in the United Kingdom.—Film Booking Offices.

1926 " At the Edge of the World " (German)
   Studio.—Ufa Films Ltd.
   Director.—Karl Grune.
   Scenario.—Karl Mayer.
   Camera-man.—Fritz Arno Wagner.
   Designs.—A D. Neppach.
   Chief Actors.—Brigette Helm. Albert Steinruck. Jean Bradin
   Distributed in the United Kingdom.—Gaumont-British Films.

1928 " Adventures of a Ten-Mark Note." (German)
   Studio.—Fox-Europa.
   Director.—Berthold Vietrel.
   Camera-man.—Helmar Larksi.
   Designs.—Walther Reimann.

Chief Actors —Werner Futterr. Walther Frank Imogene Robert-
son. Anna Mieller.

1928 " What Price Glory."
Director —Raoul Walsh
Chief Actors —Victor McLaglen Edmund Lowe Dolores del
Rio.

1929 " Aélita." (Soviet)
Studio —Vufku
Director —O Dovjento.
Scenario —Muller Spinel
Camera-man —Demutzky.

— " Love Parade " (American)
Studio —Paramount Pictures Ltd.
Director.—Ernst Lubitsch
Scenario.—Ernst Vajda
Chief Actors.—Maurice Chevalier. Lupino Lane Jeannette
MacDonald Lillian Roth

1930. " Tell England "
Studio.—British Instructional Films Ltd
Producer.—Anthony Asquith
Scenario —Anthony Asquith
Camera-man —Jack Parker
Chief Actors —Tony Bruce Fay Compton.

1932 " I am a Fugitive from a Chain Gang "
Studio —Warner Brothers.
Director.—Sol Polito
Chief Actors —Paul Muni. Preston Foster. Glenda Farrell.
Helen Vinson.
Length of film.—8,104 feet.
Running time.—90 minutes.
Certificate " A."

1934 " David Harum "
Studio.—20th Century Fox Films Ltd.
Director —James Cruze
Scenario —Walter Woods. .
Chief Actors —Will Rogers Kent Taylor. Stepin Fetchit.
Louise Dresser. Evelyn Venable.
Distributed in England.—Fox Film Co. Ltd.

1935 " Nell Gwynn."
Studio —British Dominions Film Corporation Ltd.
Director —Herbert Wilcox.
Scenario.—Miles Malleson.
Camera-man —

Chief Actors.—Sir Cedric Hardwicke. Anna Neagle.
Distributed in the United Kingdom.—United Artists Corporation
    Ltd.
Length of film —6,811 feet.
Running time —76 minutes.
Certificate " A "

1936 " Showboat."
Director —James Whale.
Scenario —Oscar Hammerstein.
Camera-man.—John Mescall.
Chief Actors —Allan Jones. Charles Winniger. Paul Robeson.
    Irene Dunne. Helen Morgan. Helen Westley.
Distributed in the United Kingdom.—General Films Distributors.
Length of film.—10,315 feet.
Running time —90 minutes.
Certificate " U."

EDITING

1925 " Joyless Street." (German.)
Studio.—Sofar Films.
Director.—G. W. Pabst.
Scenario.—Willie Haas.
Camera-man —Guido Seeber.
Chief Actors —Werner Krauss. Valeska Gert. Asta Nielson.
    Greta Garbo. Agnes Esterhazy.

— " Tartuffe." (German.)
Studio.—Ufa Films.
Director.—F. W. Murnau.
Scenario.—Karl Mayer.
Camera-man —Karl Freund.
Chief Actors —Emil Jannings. Werner Krauss. Lil Dagover.
    Louise Hoflich.
Distributed in the United Kingdom.—Wardour Films.

1929 " Chien Andalou." (French.)
Studio.—Private.
Director.—Louis Bruniel.
Scenario —Louis Bruniel.
(A surrealist production.)

1930 " Westfront " (German.)
Studio.—Nero.
Director.—G. W. Pabst.
Scenario.—Vajda.
Camera-man.—Fritz Arno.
Chief Actors.—Gustav Dissel. C. Clausen. H. Mobis.

TREATMENT OF STORY (Theme)

1919 " Cabinet of Doctor Caligari." (German.)
Studio —Decla Bioskop
Director —Robert Wiene
Scenario —Karel Mayer.
Camera-man —Willy Hameister
Design.—Walther Reismann.
Chief Actors —Conrad Veidt. Werner Krauss Hans von
  Tvaradovski. Friedrich Feher. Lil Dagover
Distributed in the United Kingdom.—Philips Film Co.

— " Dubarry." (German.)
Studio —Decla-Bioskop.
Director —Ernst Lubitsch.
Chief Actors —Emil Jannings. Pola Negri

1923 " Covered Wagon."
Studio —Famous-Players-Lasky.
Director —James Cruze
Scenario.—Jack Cuningham.

1926 " Ben Hur."
Studio.—Metro-Goldwyn-Mayer.
Director —Fred Niblo.
Chief Actors.—Ramon Novarro. F X. Bushman. Nigel de Brulier
  Mitchell Lewis May McAvoy. Betty Bronson Claire
  McDowell Kathleen Key. Carmel Myers.
Length of film.—11,461 feet.
Running time.—127 minutes
Certificate " A."

1927 " Flesh and the Devil." (American.)
Studio.—Metro-Goldwyn-Mayer.
Director.—Clarence Braun.
Scenario.—Benjamin Glazer.
Camera-man.—Williams Daniels.
Designs.—Cedric Gibbons.
Chief Actors —John Gilbert. Lars Hanson. Greta Garbo.

1930 " Monte Carlo."
Studio.—Paramount Pictures.
Director.—Ernst Lubitsch.
Scenario.—Ernst Vajda
Camera-man.—Vidor Milner.
Chief Actors.—Jack Buchanan. Claude MacAllister. Jeannette
  MacDonald. Zazu Pitts.

1931 " Frankenstein "
  Studio —Universal Pictures Ltd.
  Director —James Whale.
  Scenario.—Garret Fort.
  Camera-man —Arthur Eleson.
  Chief Actors —Colin Clive. Boris Karloff. John Boles. Mae
      Clarke
  Distributed in the United Kingdom —Universal Pictures Ltd.
  Length of film.—6,098 feet.
  Running time —80 minutes
  Certificate " A."

1932 " Dr. Jekyll and Mr Hyde "
  Studio —Paramount Pictures Ltd
  Director —Rouben Mamoulian.
  Scenario —Samuel Hoffenstein and Percy Heath
  Distributed in the United Kingdom —Paramount Films Ltd
  Chief Actors —Frederic March Miriam Hopkins. Rose Hobart
  Length of film —7,269 feet.
  Certificate " A "

1933 " Gabriel over the White House "
  Studio —Metro-Goldwyn-Mayer (Culver City).
  Director —Gregory La Cava.
  Scenario —Carey Wilson
  Camera-man —Bert Glennon.
  Chief Actors.—Walter Huston. Franchot Tone Karen Morley.
  Distributed in the United Kingdom.—Metro-Goldwyn-Mayer
  Length of film —8,489 feet.
  Running time.—94 minutes.
  Certificate " A "

1935 " David Copperfield."
  Studio.—Metro-Goldwyn-Mayer.
  Director.—George Cukor.
  Scenario.—Howard Estabrook and Sir Hugh Walpole.
  Camera-man —Oliver T. Marsh.
  Chief Actors —W. C. Fields. Lionel Barrymore. Lewis Stone.
      Frank Lawton Freddie Bartholomew. E. Allan. Roland
      Young Basil Rathbone. Maureen O'Sullivan. Madge Evans.
      Edna May Oliver. Elsa Lanchester.

  — " Les Misérables "
  Studio.—United Artists Corporation Ltd.
  Producers.—Joseph M. Schenck and Darryl Zanuck.
  Director.—Richard Boleslawski.
  Scenario.—W. P. Lipscomb.
  Camera-man.—Gregg Toland.

Chief Actors.—Frederic March. Charles Laughton. Sir Cedric Hardwicke

Distributed in the United Kingdom.—United Artists Corporation Ltd.

Length of film.—10,009 feet.

Running time.—111 minutes.

Certificate " A."

1936 " Green Pastures."

Studio.—Warner Brothers.

Directors.—Mare Connelly and William Keighley.

Chief Actors.—Rex Ingram Oscar Polk Myrtle Anderson.

Scenario.—Robert Edmond Jones

Length of film.—8,270 feet.

Running time.—92 minutes.

Certificate " U."

1937 " The Road to Glory."

Studio.—20th Century Fox Film Co Ltd.

Director.—Howard Hawks

Scenario.—Joel Sayre and William Faulkner.

Chief Actors.—Frederic March Warner Baxter. Lionel Barrymore. Gregory Ratoff June Lang

Distributed in the United Kingdom.—Fox Film Co Ltd.

Length of film.—9,203 feet

Running time.—80 minutes.

Certificate " A."

APPENDIX III

HISTORICAL DATA

65 B.C. Lucretius in his *De Rerum Natura* made certain pertinent remarks relative to the subject of vision.

1824 Peter Mark Roget read a paper before the Royal Society on " The Persistence of Vision " with regard to moving objects.

1831 Joseph Antoine Plateau commercialised the idea of cartoons by sketching fourteen drawings on a cylinder. When the cylinder revolved, the audience, looking through a peephole in the front disc, saw the drawings move in the rear disc.

1853 Baron Franz von Uchatius, an Austrian artillery officer, combined the disc device with the magic lantern and projected the pictures upon a screen.

—— The Plateau-Stampfer labours gave rise subsequently to the invention of the Zoetrope or " Wheel of Life."

1857 A patent taken out in France by a man named Leon Scott for a device known as the Phonautograph.

1861 Coleman Sellers, a mechanical engineer of Philadelphia, made the first known endeavour to relate photography to the principle of the Zoetrope. (He posed his sons in a series of photographs showing them in successive phases of a cycle of action, driving a nail into a box.) The photographs were mounted on the blades of a paddle-wheel, which, when revolved, from a given point of view, produced a Zoetrope effect.

—— Coleman Sellers, on February 5th, 1861, in America, patented his machine as the " Kinematoscope."

—— Clark Maxwell showed that all colours may be formed by mixing the three primary colours in various proportions. He took three photographs, one through red, one through green, and one through blue solution. He then made positives of these on lantern slides, which he projected one on top of another by three lanterns, each being projected through its original taking solution on to a screen. He then obtained the original coloured image, and any other desired colour, by adjusting the separate beams.

1864   A complete anticipation of the motion picture was embodied in a patent application by Lewis Arthur Ducos du Hauron, in France, on April 25th, 1864

1865   Messrs. Onimus and Martin, two investigators into the subject of chronophotography in movement, exposed the heart of a living animal, taking a photograph of it by leaving the lens permanently uncovered   The photograph was found to have a double outline representing the two extreme positions of contraction and dilation.

—   In the same year Messrs. Demeny and Quénu made use of incandescent lamps in analysing the characteristic gait of patients suffering from various kinds of lameness. Lamps were attached to the joints of the legs, shoulders, and head of the affected person. These lamps were connected with a battery. The negative obtained consisted of a series of bright spots corresponding to the successive positions of the different lamps. By connecting the points by straight lines the geometrical chronophotograph of the gait was obtained.

1870   The Sellers method of photography-posed phases of motion was applied to a projecting Zoetropic device by Henry Reno Heyl, an engineer and inventor in Philadelphia   This was in effect the application of photography to the invention of Baron Uchatius

—   The Heyl device was named the "Phasmatrope"   It carried photographs of six poses of a waltzing couple repeated three times, giving a capacity of eighteen pictures. (It is interesting to note that the wheels on which the pictures, glass plate transparencies, were mounted, were actuated by a ratchet-and-pawl mechanism giving each image a period of rest on the screen, a method and principle which had to be rediscovered a quarter of a century later.

1872   Eadweard Muybridge began his investigations into the science of Zoopraxography, describing the limb action adopted by quadrupeds—especially by the horse—in their various acts of progressive motion, illustrating the most important phases of these movements by tracings from original photogravures.
In the presentation of the subject the course usually adopted is to project, much larger than the size of life, upon a screen, a series of the most important phases of some act of animal action—the stride of a horse while galloping   These successive phases are then combined in the Zoopraxiscope, which is set in motion, and a reproduction of the original movements of life is distinctly visible to the audience   Horse-races are reproduced with such accuracy that the individual characteristics of the motion of every animal can readily be seen; flocks of birds fly across the screen with every movement of their wings clearly seen.
Eadweard Muybridge was official photographer of the United

States Government for the Pacific Coast. At this time the rapid dry plate had not been evolved from the laboratory of the chemist and the problem arose of how to develop a sufficiently intense and contrasted image upon a wet collodion plate, after an exposure of so brief a duration that a horse's foot moving with a velocity of more than a hundred lineal feet in a second should be photographed " sharp."

Experiments made with a well-known fast trotter—" Occident " —as a model, while trotting at a speed of a mile in two minutes and sixteen seconds, laterally in front of the camera, decided the argument in favour of those disputants who thought that a horse in the act of trotting was for a portion of his stride entirely free from contact with the ground It is known that some horses while in the act of trotting make a stride of twenty feet in length, making it difficult to understand why any doubt should have existed.

1872 Monsieur E. J. Marey, Professor at the College of France, conducted experiments in animal mechanism and terrestrial and aerial locomotion with concentration on the paces of the horse and the movements of birds during flight. He amplified these researches by the publication of a book *Movement* in 1895.

— Without any intended relation to motion picture development, Leland Stanford, a Californian railway magnate and sportsman, wished to investigate the movements of a horse. John D. Isaacs, an engineer on the staff of the Central Railway, contrived a battery of cameras with electrical shutter controls. The shutters of the mechanisms were improved, and the speed of the photographic materials was increased, permitting at least the first real photographic records of objects in rapid motion. (A description of these experiments was published in Dr. Wellman's *The Horse in Motion as shown by Instantaneous Photography*, published in London in 1882.)

1882 On March 13th, 1882, at the Royal Institution of Great Britain, Eadweard Muybridge exhibited the results of his experiments at Palo Alto, when he, with the Zoopraxiscope and an oxy-hydrogen lantern, projected on the wall a synthesis of many actions he had photographed of a horse in motion, and in his analysis of the quadrupedal walk he says : " So far as the camera has revealed, these successive foot fallings are invariable, and are probably common to all quadrupeds." He spent some forty thousand dollars in the course of his experiments and investigations.

— Friese-Greene of Bristol in his early days was a Blue Coat schoolboy, later to become a photographer. It was at 34, Gay Street, Bath, that Friese-Greene discovered the national amusement of today He lived in the age when it would give a sinister atmosphere

if a man suggested moving pictures. His camera cost £150 and he laboured night and day without rest and without food

He toyed with the simple idea and eventually worked with a man named Mortimer Evans Still later he joined forces with John Rudge, who had devised a projection lantern called the Bio-Phantoscope—the revolving lantern of life.

1882 Working about the same time on parallel lines was a man named Robert W. Paul, who was experimenting with a machine called the " Animatograph "

1885 Flushed with excitement, Friese-Greene submitted his discoveries to the Photographic Society. The members were not interested, neither did they give him any support; they considered the idea to be the meanderings of a disordered mind

1887 Thomas Edison, of New Jersey, was aware of Muybridge's idea, but his efforts were governed entirely by the phonograph idea His first motion-picture machine recorded spirals of tiny pictures on a cylinder, in the manner of the phonograph groove. The pictures were given an intermittent motion and seen under a microscope. He then changed his idea to a tape and belt

Friese-Greene conceived the idea of linking up the newly invented phonograph of Edison Bell with photographed movement.

1888 Emilé Reynaud patented his praxinoscope which attempted to give the illusion of movement, he also perfected the perforation of the film. He organised a Theâtre Optique, which for many years gave shows at the Musée Gocéyin.

1889 Friese-Greene alighted on a solution and sent a description of it to Edison, whom he asked to co-operate with him, and produce talking pictures. Drawings of the camera patent were sent but nothing more was heard of the matter

— In August, 1889, George Eastman, of Rochester, N Y., began the manufacture of a photographic film on nitro-cellulose base, a material to meet the requirements of roller photography for the Eastman-Kodak.

— The demonstration of the Edison Kinetoscope at West Grange, N.J., on October 6th, 1889, with a strip of Eastman film which made the motion picture an established fact.

1890 Friese-Greene moved to 20, Brook Street, Holborn, London, where he developed and successfully printed the first moving picture photographed on a celluloid film. This depicted tottering pedestrians and hansom cabs careering round Hyde Park Corner. The first public exhibition was at 92, Piccadilly, London, in a shop the window of which was pasted over with brown paper with the exception of a square cut out in the centre. The effect was

startling   The pedestrians saw a skeleton dancing in a most terrifying manner, a huge crowd gathered and the traffic was effectively jammed.

1891   Another pioneer, C. Francis Jenkins, a shorthand-typist in the Treasury Department of the United States Government at Washington, perfected a small machine of cogs, gears, and lenses. He took photographs of a dancer on a variety stage. The photograph was in colour executed by an experienced transparency painter.

1893   Georger Demeny invented chromophotography.

1894   The Edison " Kinetoscope " became commercialised.

1895   The " Vitascope " came into general use by the efforts of Thomas Armat, of Washington, N.J., who described the principle of the modern projector, as a film movement which gave each successive image a period of rest and illumination in excess of the period of movement from image to image. This machine was first demonstrated, publicly, at the Cotton States Exhibition, Ga., in September, 1895.

1895   On February 13th, 1895, Louis and Auguste Lumière patented the first projection machine. In the same year the first film, " Lunch Hour at the Lumière Factory," was shown before the Societé d'Encouragement de L'Industrie Nationale. It was fifty feet long. Nine months later the cinema as now understood came into being.

1896   In February, 1896, Robert W. Paul, of London, manufacturer of scientific instruments, gave a demonstration of a projector machine called the " Theatrograph " at the City and Guilds of London Technical College, in Finsbury, London. His first films were " Rough Sea at Dover," " An Engineer Working in a Shop." In April of the same year he showed colour-films to the public; they were hand-painted by Mr. Doubill, slide painter to the Polytechnic, London.

—   On April 28th, 1896, the Armat machine was presented as the " Vitascope " at Koster and Bial's Music Hall at Herald Square, in New York. A vaudeville career opened before the motion picture and the holding capacity was increased to 1,000 feet (sufficient to occupy the typical time of a stage turn), thus establishing the existing standard of one reel.

—   In Europe the screen suffered from the Charity Bazaar fire in Paris on May 4th, 1897, in which 180 persons perished. As the source of the fire was traced to the film machine this was a great setback to further progress, the public being too afraid of a repetition.

1897 An English journalist who had emigrated to America improved Edison's machine, entirely doing away with the flicker and twisting. The outcome was the establishment of the Vitagraph Film Company.

—— In this year, the fifty-feet length of film used in the " Kinetoscope " had grown to 11,000 feet. This was shown by Enoch Rector, an American, reproducing the Corbett-Fitzsimmons fight at Carson City, Nevada.

—— Hale's Tours were inaugurated which enabled people to see " shots " of different countries thrown on to a screen at the end of a room—the room being arranged like the interior of a railway carriage ; to make the journey more realistic, an additional effect was secured by the seats rocking from side to side when the carriage appeared to be rounding a corner. The outside of the theatre resembled the end of a railway carriage, upon twin rails, the attendant being dressed like a railway guard, complete with red and green flags.

1898 Holman Evans, realising the popularity of a religious film, made " The Life of Jesus " in the form of a Passion Play. This was " shot " on the roof of the Grand Central Palace Hotel in New York. It was a foisted deception of the Life of Jesus, a traditional play of two hundred years previously. The American public long remembered this imposition and viewed the film with suspicion.

1903 Georges Melies at the Théâtre Robert Houdin in Paris showed some really wonderful tricks of fade-outs, dissolves, etc. Such a fantastic film was " The Trip to the Moon." 1902.

—— Edwin S. Porter made the first attempt to relate a story through the medium of the films, and produced " The Great Train Robbery," eight hundred feet in length.

—— The advent of the story-picture provided the necessity for the erection of suitable buildings, resulting in the famous " Nickeldeons " or " five-cent " theatres opened by Harvey Davis, of Pittsburgh, a real-estate operator and the proprietor of a stage theatre.

1906 This year saw the first Danish attempt at film production by the establishment of The Nordisk Films Co. by Ole Olsen.

1907 David Wark Griffith, a young American director, evolved a screen technique of far-reaching significance. Later he brought into first practical use certain methods of pictorial emphasis, such as " close-up," " cut back," " fade out," and " dissolve."
G. A. Smith devised a system known as " Kinemacolour," in which alternating pictures were taken and projected through a rotating shutter with red and green sectors. This method was handicapped by colour bombardment.

O

1907   Pathé Frères decided to abandon the sale of films and establish a chain of renting offices.

1908   On February 2nd, 1908, at the Congress of Film Producers in America it was agreed to abstain from renting films to the many small cafés showing them entirely without any admission charge to their customers.

—   It was in this year that animated cartoons first made their appearance. Émile Cohe produced Phantasmagoria. It was made up of 2,000 drawings and was 100 feet long. The drawings themselves were crude, although the essential technique was present.

—   It was due to an accident that Melies discovered the " dissolve " It was the practice to diminish the opening of the lens while shooting the remaining few feet of each scene in order not to fog the film. When editing this particular portion was eliminated as of no use. By mistake, one day, it was left on and Melies discovered that a much more perfect change from one scene to another had been accomplished. He continued his experimenting by beginning each scene with the diaphragm almost closed and then gradually enlarging the aperture, thus effecting a rough " dissolve."

1911   The film industry developed rapidly, the most sensational pictures found their way from England, exercising considerable impression on the American producers. In England, the Hepworth, the British and Colonial Kinematograph, and the London Film Companies were being recognised by the exceptionally good quality of the films.
          France, with her accustomed liking for spectacular pageantry, through Louis Mercanton produced " Queen Elizabeth." The film was so brilliant in execution that Adolf Zukor purchased it for exhibition in New York.

1912   The first public trade show took place on Easter Monday, 1912, at the Court Theatre, Tottenham Court Road, London, the film shown being " Christopher Columbus " (although at that time it was well boosted by the press, today we would laugh heartily at the crudities and anachronisms).
          From this year to 1915 was a period of transition in which Zukor led the way to what is now known as " feature pictures," as " Quo Vadis," eight reels. Then followed D. W. Griffith with " Birth of a Nation " in twelve reels.
          Gaumont made an attempt at a three-colour Additive process consisting of beam-splitting and making it possible to take three geometrically identical images. These pictures were produced by three lenses erected vertically, one beneath the other. The result was a failure due to the presence of " parallax."

1914   The opening of the Strand Super Theatre in Broadway, New York, U.S.A., ushered in a new era in the history of the cinema. The seating accommodation was exceptional

The Subtractive Technicolour method was invented by a firm of Boston engineers, Dr. Herbert Kalmus, Daniel Frost Comstock, and W. B. Westcott. Their first experiments were with a two-colour Additive process, but this was soon given up for a two-colour Subtractive method. In this, two gelatine reliefs, produced on thin celluloid, were glued together back to back and dyed in complementary colours.

—   The greatest labour-saving device in cartoon history was invented by Earl Hurd. He began tracing his moving characters on transparent sheets of celluloid, superimposing these on water-colour backgrounds. Thus one background could be used for an entire scene as a single stage set. In those days it took four thousand drawings to make a cartoon.

1915   To control the American cinema industry there was established the Motion Picture Board of Trade and the National Association of the Motion Picture Industry.

1918   Cecil B. De Mille made two films without star actors, proving that films could be profitable without featuring well-known stars with their enormous salaries.

1919   The vacuum tube amplifier became perfected during 1919, rendering the art of sound-on-film recording commercially possible.

1921   Friese-Greene, the father of the film, died suddenly on May 5th, 1921, having expended all his wealth on his work. He died of heart failure whilst attending a public meeting.

—   The first film actually made with the Technicolour camera was entitled " Toll of the Sea."

1922   In America, to prevent abuse of the trade, disastrous scandals, and salacious production, the Motion Picture Producers' and Distributors' Association came into being.

1923   Hollywood establishes a School of Light Comedy of a domestic drawing-room type, showing brilliant wit and intelligence.

1925   A new element entered into the American film industry and potent evils were foreshadowed. Not satisfied with the industry as a medium of easy profits, they caused disaffection industrially and politically, eventually exercising an influence on world trade. To check this, quotas were formed or fixed. This restriction encouraged England to build up a film industry.

1927   The British Film Bill of 1927 compelled every distributing firm and exhibitor to include a percentage of British films irrespective

of their merits. Similar restrictions came into force in France and Germany. In England, at that time, the home-made film was regularly inferior, the result being that most of the smaller British companies went out of business, and those remaining concentrated on producing much better films. British International, Gaumont-British, British Instructional, and Gainsborough Films gained a secure footing in this country by imitating American methods.

1928 The introduction of the " Dialogue Film " formed the first junction of the motion picture with electrical science.

1929 This year found the major American film studios producing " talkies." The advance of sound on the screen had a revolutionary effect on many phases of production. Electrical and acoustical engineers became important factors at the studios, many sound-proof stages were erected, and motion picture players developed voices for what had hitherto been solely a pantomimic art.

1930 Monsieur Audibert patented an optical system in which three objectives were used behind a large divergent lens.

1931 The Gilmore Colour Process : two images taken, side by side, on a 35 mm. film by transposing the image lengthwise upon the film. This process is very similar to the Busch (German), and the Cinecolour (British).

— A beam-splitting process was completed resulting in a double refractory medium performing the work of a dividing element of a beam-splitter for use in colour-photography.

— The Busch process, a German two-colour Additive process, was successfully evolved in this year.

1932 It was not until this year that the spectral colours could be finally produced. In the Technicolour camera three negatives are exposed simultaneously through a single lens. This is accomplished by a beam-splitter made of two prisms of optical glass with silver-sputtered faces which produce a partially reflecting mirror. By this means, part of the light reflects through an aperture at the left of the lens, and the remainder passes through the normal aperture. A single super panchromatic film is exposed through this aperture behind a green filter, transmitting green light. Through the left aperture is passed a standard bipack (two films with their emulsion surfaces in contact), the front film being sensitive to blue, and carrying a red-orange dye which absorbs the blue rays so that only red rays are affected by the rear emulsion.

1934 The British Film Institute : the British Kinematograph Society formed a special committee to consider means that should be adopted to preserve cinematograph films for an indefinite period. This year saw the birth of the National Repository of Films of permanent value for the preservation for posterity of film records

of contemporary historical events, entertainment films of special merit, and films made for scientific research, and films on the commercial and cultural side.

1935   The Museum of Modern Art Film Industry was established in New York in this year. Its functions are precisely the same as the British Film Institute.

1938   Georges Melies died during this year after a very brief illness, being one of the few of the early Producers who did not amass a large fortune.

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